PHYTOPATHOLOGY

AN INTERNATIONAL JOURNAL

OFFICIAL ORGAN OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY

VOLUME XXII

JANUARY–DECEMBER, 1932

EDITORS

H. B. HUMPHREY — ANNIE RATHBUN GRAVATT — EUBANKS CARSNER

EDITOR FOR EUROPE
H. M. QUANJER

ASSOCIATE EDITORS

RUTH F. ALLEN — CHARLES DRECHSLER — J. C. GILMAN
D. L. BAILEY — F. D. HEALD — W. F. HANNA
L. R. HESLER — L. O. KUNKEL — W. D. VALLEAU
WM. H. WESTON, JR. — G. L. PELTIER — JESSIE I. WOOD

BUSINESS MANAGER
F. C. MEIER

THE AMERICAN PHYTOPATHOLOGICAL SOCIETY

OFFICERS

F. D. HEALD, *President*
J. G. DICKSON, *Vice President*
F. C. MEIER, *Secretary-Treasurer*

COUNCILS

L. O. KUNKEL — M. W. GARDNER — G. W. KEITT
H. B. HUMPHREY

PUBLISHED FOR THE SOCIETY
SCIENCE PRESS PRINTING COMPANY
LANCASTER, PA.

ERRATA

Page 75, paragraph 3, line 10, *after* sodium *add* silicate.

Page 76, small table, *combine first column headings,* Average daily losses, 180-day incubation, *applying to both columns.*

Page 79, paragraph 3, line 2, *change index* 10 *to* 3; *delete* footnote 10.

Page 108, paragraph 2, line 7, *after* reaction of *insert* all.

Page 149, table 4, legend, *read Sclerotinia* for *sclerotinia.*

Page 159, paragraph 3, line 1, *read* sulphite *for* sulphide.

Page 160, table 14, column heading 2 under Pentathionic acid, *read* 0.00068 N. *for* 0.0068 N.; table 14, line 6 under Pathogenic fungi tested, *read* Botrytis *for* Botrytus.

Page 197, paragraph 2, line 2, *read* have *for* has.

Page 234, paragraph 3, line 9, *change* This form *to* Thus, formation.

Page 344, figure 11, legend, line 4, *read* B. *for* D.; line 11, and page 345, line 1 and 2, *substitute* apparently have mistaken the gelatinous egg-containing matrix for the dead body of the female filled with developing eggs *for* apparently have mistaken the dead body of the female filled with developing eggs for the gelatinous egg-containing matrix.

Page 397, paragraph 2, line 2, *read* Neofabraea *for* Neofabreae.

Page 399, paragraph 4, lines 10 and 11, *substitute* agar, corn-meal, malt, Dox, apple, and beef agars *for* agar. Corn meal, malt, Dox, apple, and beef agars also were used.

Page 481, paragraph 4, line 1, *read* cavavaliae *for* canabaliae.

Page 497, figure 1, legend, lines 1 and 2, *read* Marquis *for* Marquiz.

Page 548, line 6, *read* 549 *for* 56.

Page 784, line 3, *read* facultative *for* faculative.

Page 14, line 22, Supplement to Number 9, *read* MacLachlan, J. D., *for* McLachlan, J. D.; line 56, *read* Miyabe, Kingo, *for* Miyaba, Kingo.

Page 817, table 1, legend, *read* data *for* date.

Page 822, line 14, *read* was *for* and.

Page 885, table 4, legend, *read* hypochlorite *for* hyopchlorite; line 10, *after* cent *insert* of.

Page 888, paragraph 2, line 11, *after* acid *insert* (=3 per cent commercial HCl by volume).

Page 889, paragraph 4, line 2, *change* maximum *to* usual.

Page 896, table 11, column 5, *change* 86 *to* 96.

Page 938, line 5, *read Celastrus for Celastris.*

Science
Wahr

CONTENTS OF VOLUME XXII

NO. 1. JANUARY

PAGE

Abstracts of papers presented at the twenty-third annual meeting of The American Phytopathological Society, New Orleans, Louisiana, December 29 to 31, 1931, inclusive 1

Some nutritional disorders in corn grown in sand cultures. N. A. PETTINGER, R. G. HENDERSON, and S. A. WINGARD 33

Chloroses of the rose. RICHARD P. WHITE 53

A study of laboratory methods for investigating the relation between moisture content of wood and fungal growth. FERDINAND W. HAASIS 71

Varietal susceptibility of beans to an American and European strain of Phytomonas medicaginis var. phaseolicola, and a comparison of the strains in culture. WALTER H. BURKHOLDER and KAROL ZALESKI 85

Immunity in plants. J. A. DE TOMASI 95

Phytopathological Note 103

NO. 2. FEBRUARY

Physiologic specialization as a factor in the epiphytology of Puccinia graminis tritici. JAMES M. WALLACE 105

The relation of pentathionic acid and its component constituents to the toxicity of sulphur fungicides. O. NEAL LIMING 143

Studies on the development of crown gall, hairy root, and wound overgrowths in treated soil. A. J. RIKER and W. M. BANFIELD 167

The development of crown gall, hairy root, and wound overgrowth in glass cylinders. A. J. RIKER, E. M. HILDEBRAND, and S. S. IVANOFF 179

The pathogenicity of Fusarium conglutinans Wr. at low soil temperatures. L. M. BLANK 191

Book Review 197

NO. 3. MARCH

Frederick John Pritchard, 1874–1931. WILLIAM S. PORTE 201

A preliminary report on resistance to curly top of sugar beet in bean hybrids and varieties. W. W. MACKIE and KATHERINE ESAU 207

Phytophthora arecae, parasitic on Areca tops, and a strain of P. palmivora Butl. (P. Faberi Maubl.) on a new host, Aleurites fordi. S. V. VENKATARAYAN 217

Areolate mildew of cotton. JOHN EHRLICH and FREDERICK A. WOLF 229

Sclerospora graminicola on bajra (Pennisetum typhoideum). H. CHAUDHURI 241

Transmission of smut and molds in figs. H. N. HANSEN and A. E. DAVEY 247

Seed dissemination in Fusarium wilt of pea. W. C. SNYDER 253

Effect of bunt on height of wheat plants. E. N. BRESSMAN 259

Phytopathological Notes

An atypical lesion on cotton leaves caused by Bacterium malvacearum. MARY K. BRYAN 263

Root, crown, and shoot rot of milo. CHARLOTTE ELLIOTT, F. A. WAGNER, and L. E. MELCHERS 265

Sulphur dioxide injury of tomatoes. G. B. RAMSEY 267

Black-walnut canker caused by a Nectria. J. M. ASHCROFT 268

Botrytis stem infection in pears. J. S. COOLEY 269
Black rot of stocks. L. M. COOLEY 270

NO. 4. APRIL

Calvin Henry Kauffman, 1869–1931. E. B. MAINS 271
Effects of electromagnetic waves on fungi. FRANK H. JOHNSON 277
Transmission of the pineapple yellow-spot virus by Thrips tabaci. MAURICE B. LINFORD 301
The development of the root-knot nematode in relation to root tissues of pineapple and cowpea. G. H. GODFREY and JULIETTE OLIVEIRA 325
Investigations on apple blotch. EDWIN J. KOHL 349
Peanut wilt in Georgia. J. H. MILLER and H. W. HARVEY 371
Observations on the parasitic ability of certain species of Pythium. F. K. SPARROW, JR. 385
Phytopathological Note 391
Book Review 393

NO. 5. MAY

Some pathological studies on apple cankers. NELLIE A. BROWN 397
Zinc-lime: a fungicide for the peach. JOHN W. ROBERTS and LESLIE PIERCE 415
Seed treatments with chemical dusts and formaldehyde for smut control in oats. V. F. TAPKE 429
Resistance of monocotyledons to Phymatotrichum root rot. J. J. TAUBENHAUS and WALTER N. EZEKIEL 443
Resistance of the Turk's-cap hibiscus, Malvaviscus conzattii, to Phymatotrichum root rot. WALTER J. BACH and J. J. TAUBENHAUS 453
Growth of Phymatotrichum omnivorum in plant juices as correlated with resistance of plants to root rot. WALTER N. EZEKIEL, J. J. TAUBENHAUS, and J. F. FUDGE 459
Report of the twenty-third annual meeting of The American Phytopathological Society 475

NO. 6. JUNE

Nathaniel Orson Howard, 1880–1932. WALTER H. SNELL 491
The influence of altered host metabolism upon modification of the infection type with Puccinia graminis tritici p. f. 21. DOROTHY F. FORWARD 493
A rot of apple fruit caused by **Phytomonas melophthora**, n. sp., following invasion the apple maggot. T. C. ALLEN and A. J. RIKER 557
The basis for Sclerospora sorghi as a species. WM. H. WESTON, JR., and B. N. UPPAL 573
Two new hosts of the downy mildew of sorghum in Bombay. B. N. UPPAL and M. K. DESAI 587
Chemical treatment of pecan rosette. A. O. ALBEN, J. R. COLE, and R. D. LEWIS 595
Efficiency of oiled wraps in the commercial control of apple scald. NEIL E. STEVENS and NELLIE W. NANCE 603
Some diseases of wild potatoes in Mexico. DONALD REDDICK 609
Phytopathological Note
Macrosporium solani on tomato fruit. GEOFFREY SAMUEL 613

NO. 7. JULY

The effect of different temperatures on the reaction of Hope wheat to bunt. WILLIAM K. SMITH 615

A nonifectious leaf-deforming principle from mosaic tomato plants. H. R. KRAYBILL, P. H. BREWER, R. W. SAMSON, and M. W. GARDNER 629
A hitherto unreported disease of maize and beans. W. W. MACKIE 637
The adherence of copper dusts to foliage. L. R. STREETER, E. O. MADER, and F. J. KOKOSKI 645
The effect of delayed planting on the control of bunt by copper carbonate dust. H. H. FLOR 651
The behavior of Bacillus amylovorus in soil. P. A. ARK 657
The production of bunt chlamydospores in the vegetative tissue of the wheat plant. H. H. FLOR 661
Phytopathological Notes 665
Armillaria crown rot of strawberry. S. M. ZELLER 665
Pineapple disease (Thielaviopsis ethaceticus) on sugar cane at Tucumán, Argentina. H. A. JAYNES 667

NO. 8. AUGUST

Louis Hermann Pammel, 1862–1931. JOSEPH C. GILMAN 669
The effect of the sugary gene in corn on resistance to seedling blight caused by Gibberella saubinetii. P. H. SENN 675
Carbohydrate fermentation by certain closely related species in the genus Phytomonas. WALTER H. BURKHOLDER 699
Crinkle disease of strawberry. S. M. ZELLER and E. K. VAUGHAN 709
Keeping quality as a factor in selecting new varieties of small fruits. NEIL E. STEVENS 715
Book Review 721

NO. 9. SEPTEMBER

Pathogenicity of three red-cedar rusts that occur on apple. PAUL R. MILLER 723
The properties of plant viruses from different host species. JAMES JOHNSON and THEODORE J. GRANT 741
A centralized scab-spray service. A. L. PIERSTORFF 759
Verticillium wilt of cotton in Mississippi. L. E. MILES and T. D. PERSONS 767
Blight of peppers in Florida caused by Phytophthora capsici. GEORGE F. WEBER 775
Synergism in a bacterial disease of Hedera helix. WALTER H. BURKHOLDER and CARL E. F. GUTERMAN 781
Phytopathological Notes 785
Bacterial and fungous flora in certain sulphur fungicides. J. F. ADAMS 785
Notes on Phyllosticta rabiei on chick pea, II. RODERICK SPRAGUE 786
Color variations in bacterial plant pathogens. MARY K. BRYAN 787
A new form of oat stem rust from a barberry area. RALPH U. COTTER 788

NO. 10. OCTOBER

A study of two Septoria leaf spots of celery. L. C. COCHRAN 791
Some environmental relations of watermelon wilt. D. R. PORTER 813
Rhizoctonia solani on cereals in South Australia. GEOFFREY SAMUEL and S. D. GARRETT 827
Trichoderma lignorum as a parasite of other soil fungi. R. WEINDLING 837
Reaction of Martin wheat to three physiologic forms of Tilletia tritici. WILLIAM K. SMITH 847
Leaf temperature of lettuce and its relation to tipburn. E. L. LECLERG 851
Studies on Bordeaux deposition. GEO. L. HOCKENYOS and GEO. R. IRWIN 857

Fungicidal value of pine-tar oil and copper resinate. E. R. DE ONG 861
Phytopathological Notes .....
Lolium infected with bunt of wheat. E. M. BREESMAN 865
Eriodendron as host of Bacterium malvacearum. B. T. PALM 867
A note on Entyloma Dahliae Syd. from Sumatra and Guatemala. B. T. PALM 868
An undescribed loose smut of barley. V. F. TAPKE 869
Plant pathology at the Fourth Congress of the International Society of Sugar Cane Technologists in Puerto Rico. MEL. T. COOK 870
Citrus mildew. W. C. LESTER-SMITH 870
Book Review 871

NO. 11. NOVEMBER

Leigh Humboldt Pennington, 1877–1929. PERLEY SPAULDING 873
Some problems concerning blue mold in relation to cleaning and packing of apples. KENNETH F. BAKER and F. D. HEALD 879
A preliminary study on the use of indelible pencils as indicators of the moisture content of wood. FERDINAND W. HAASIS 899
Mild streak of black raspberries. L. M. COOLEY 905
Notable outbreaks of cranberry fruit rots in Massachusetts. NEIL E. STEVENS 911
Effects of anaerobic conditions on the growth of the cotton-root-rot fungus, Phymatotrichum omnivorum. D. C. NEAL and R. E. WESTER 917
Phytopathological Notes .....
The rôle of diseases in plant quarantines. W. A. MCCUBBIN 921
The occurrence of the perfect stage of Phomopsis mali in the United States. JOHN C. DUNEGAN 922
Another gall-forming bacterium. NELLIE A. BROWN 924
A convenient method of bleaching and clearing leaves. CLARENCE R. QUICK and FRANK A. PATTY 925
The nonspecificity of the brown-ring symptoms in narcissus attacked by nematodes. G. STEINER and EDNA M. BUHRER 927
Diaporthe citri (Faw.) Wolf, the perfect stage of Phomopsis citri and P. california. H. S. FAWCETT 928
Book Review 929
The principles of plant quarantine 933

NO. 12. DECEMBER

Pathogenicity and cultural characters of the apple sooty-blotch fungus. R. C. BAINES and M. W. GARDNER 937
The mechanism of variation in imperfect fungi: Botrytis cinerea. H. N. HANSEN and RALPH E. SMITH 953
Mosaic diseases of tobacco: V. Decomposition of the safranin-virus precipitate. CARL G. VINSON 965
Phytopathological Notes .....
Preliminary note on a Phytophthora root disease of chestnut. MARGARET MILBURN and G. F. GRAVATT 977
The odor of bunt spores. W. F. HANNA 978
New developments in treating pecan rosette with chemicals. A. O. ALBEN, J. R. COLE, and R. D. LEWIS 979
Report of the Fifth Annual Cotton-Root-Rot Conference 983
Report of the Sixteenth Annual Meeting of the Pacific Division of The American Phytopathological Society 995

INDEX TO VOLUME XXII

New species in blackface type

Accelerating organism in bacterial disease of English ivy, 784

Acer, saccharum, host for Gloeodes pomigena, 938

Aerostalagmus sp. in figs, 251

Actinomycete, antagonistic to Pythium, 27

ADAMS, J. F., Bacterial and fungous flora in certain sulphur fungicides, 785–786

Adherence of copper dusts to foliage, 645–650

Agrostis spp., zonate eye spot of, 7

ALBEN, A. O., J. R. COLE, and R. D. LEWIS, Chemical treatment of pecan rosette, 595–601; New developments in treating pecan rosette with chemicals, 979–981

Aleurites, fordi, a new host for Phytophthora palmivora, 222–227; fordi, infection experiments with Phytophthora on, 225; mixed cultures of Phytophthora from Areca and, 221, 225

ALEXANDER, L. J., H. C. YOUNG, and C. M. KIGER, Causes and control of damping off of tomato seedlings, 3

Algae, Pythium spp. on, 385

ALLEN, T. C., and A. J. RIKER, A rot of apple fruit caused by **Phytomonas melophthora,** n. sp., following invasion by the apple maggot, 557–571.

Alternaria, fruit rot of avocado, 13; in perennial canker of apple, 399–411; sp., effect of, on production of hydrogen sulphide from sulphur, 155; spp., in figs, 251

Amelanchier pallida, Gloeosporium perennans on, 995, 996; inoculated with Neofabraea malicorticis, 996

American Phytopathological Society, Pacific Division, report, 995–1002; report of 23 annual meeting, New Orleans, 475–487

Ammonia formed by Phytomonas in beef-extract-peptone broth, 705–707

Ampelomyces quisqualis, parasitic on clover mildew, 31

Anaerobic conditions, effects of, on growth of cotton-rot-rot fungus, 917–920

Andropogon sorghum, host for Sclerospora sorghi, 583

Another gall-forming bacterium, 924–925

Antheridia of Phytophthora, arecae, in mixed cultures, 220; palmivora, 225

Anthracnose, and perennial canker fungi: host relations and cultural differences, 995–996; of watermelon, 16

Aphelenchoides, fragariae, brown rings produced by, in narcissus, 927–928; parietinus, produces brown rings, 927–928

Aphelenchus avenae produces rings in narcissus, 927–928

Aplanobacter, michiganense E.F.S., white variants of, 787; stewarti, cause of Stewart's disease of corn, 13

Apple, **Aspergillus sclerotiorum,** n. sp., and its relation to decay of fruit, 999; blotch, 349–369; blue mold, 604, 606; crown gall, hairy root, and wound overgrowth on, 179–189; development of crown gall and hairy root on, 167–177; Diaporthe perniciosa, 922–924; effect of, on production of hydrogen sulphide from sulphur, 154; experimental production of girdle knots on, 171–174; fruit rot, caused by **Phytomonas melophthora,** n. sp., 557–571; illustration of girdle knots on, 172; illustrations of overgrowths induced on, in glass cylinders, 182, 187; illustrations of overgrowths on, following inoculations with mixture of crown-gall and hairy-root organisms, 172; lenticel infection of fruits by Penicillium expansum, 1000; maggot, rot of apple following invasion by, 557–571; measles of, caused by dematiaceous fungus, 4; perennial canker, some pathological studies on, 397; Phomopsis mali, 922–924; production of overgrowths on stem tissue of, 183–188; rust, heterothallism in, 734–735; rust, on apple fruits, 726; rust, on apple leaves, 727; rust, relation of wounds to susceptibility, 733; rusts, 723–740; rusts, method of inocula-

tion on apple, 729; rusts, Petri-dish cultures of, 732; scab, centralized spray service, 759–766; scald, oiled wraps in control of, 603–607; sooty blotch and flyspeck, 10; sooty-blotch fungus, inoculations with, 939–945; sooty-blotch fungus, pathogenicity and cultural characters of, 937–952; sooty-blotch fungus, relation of climatic conditions to incubation period of, 945; sources of contamination and spore load, 1001; twigs, surface sterilization of, with sodium hypochlorite, 185; two forms of fire blight of, 23; varieties, susceptible to apple rust, 726; varieties, susceptible to quince rust, 726; varieties, susceptible to rust, 725; wild crab, host for Gloeodes pomigena, 937

Apples, blue mold, 879–898; cleaning solutions, 879–898; fungi on, 13

Apricot inoculated with, Gloeosporium perennans, 996; Neofabraea malicorticis, 996

Areca, catechu, Phytophthora arecae, parasitic on tops of, 217–222; mixed cultures of Phytophthora from Aleurites and, 221, 225; mixed cultures of Phytophthora from Santalum and, 219–221, 225

ARK, P. A., The behavior of Bacillus amylovorus in soil, 657–660

Armillaria, crown rot of strawberry, 665–666; mellea, causing crown rot of strawberry in Oregon, 665–666; mellea, effect of, on production of hydrogen sulphide from sulphur, 155

Aronia, successful inoculations with hawthorn rust, 730

Ascigerous stage of **Mycosphaerella areola**, n. sp., 234–235

Ascochyta rabiei (Pass.) Lab., not an Ascochyta, 787

ASHCROFT, J. M., Black-walnut canker caused by a Nectria, 268–269; Canker of black walnut caused by a Nectria sp., 3

Asimina triloba, host for Gloeodes pomigena, 937

Aspergillus, decay of apple, 13; relation of moisture to, in shelled corn, 15; **sclerotiorum**, n. sp., relation to decay of apples, 999; sp., effect of, on production of hydrogen sulphide from sulphur, 155; sp., in figs, 251; spp., in sulphur fungicides, 785

Atypical lesion on cotton leaves caused by Bacterium malvacearum, 263–264

Australia, South, Rhizoctonia solani on cereals in, 827

Avocado, diseases of, 12–13

Baby's breath, bacterial galls of, 924–925

BACH, WALTER J., and J. J. TAUBENHAUS, Resistance of grapes to Phymatotrichum, 3–4; Resistance of the Turk's-cap hibiscus, Malvaviscus conzattii, to Phymatotrichum root rot, 453–458

Bacillus, amylovorus, bactericides for, 15; amylovorus, behavior in soil, 657–660; amylovorus, pathogen closely related to, 24; radiobacter, relation of, to Bacterium tumefaciens, 5; radiobacter, treatment of soil with, 168

Bacteria, fruit rot of avocado, 13; in figs, 251; in perennial canker of apple, 399–411; in sulphur fungicides, 785

Bacterial, blight, of English ivy, description of accelerating organism, 784; disease, of English ivy, 781; galls, of Gypsophila, 924–925; spot, peach, zinc-lime for, 417–420

Bactericides in fire-blight control, 15

Bacterium, campestre, cause of black rot of stocks, 270; campestre (Pam.) E.F.S., white variants of, 787; cucurbitae Bryan, white variants of, 787; dissolvens, on sweet corn, 26; fluorescens group, in sulphur fungicides, 785; from diseased milo plants, 266; gall-forming, 924–925; herbicola aureum, 783; malvacearum, atypical lesion on cotton leaves caused by, 263–264; malvacearum, Eriodendron anfractuosum as host of, 867–868; parasitic on rust, 16; pruni, on peach, zinc-lime for, 417–420; solanacearum, causing peanut wilt, 377–380; translucens var. undulosum, pathogenicity of, 4; tumefaciens, a form of Bacillus radiobacter, 5; vesicatorium Doidge, white variants of, 787

BAINES, R. C., and M. W. GARDNER, Pathogenicity and cultural characters of the apple sooty-blotch fungus, 937–952

Bajra, green-ear disease of, in India, 241; (Pennisetum typhoideum), Sclerospora graminicola on, 241–246

BAKER, K. F., and F. D. HEALD, The importance of lenticel infection of apples by Penicillium expansum, 1000; Some problems concerning blue mold in relation to cleaning and packing of apples, 878–898

BAMBERG, R. H., Pathogenicity of Bacterium translucens var. undulosum, 4

Banana, Clitocybe root rot of, 23

BANFIELD, W. M., see RIKER, A. J.

Barberries, physiologic forms of Puccinia graminis tritici expected from, 120–121, 127–130, 136–138

Barberry, forms of Puccinia graminis produced on, 25

Barley, pathogenicity of Bacterium translucens var. undulosum on, 4; stripe, physiologic specialization in, 6; undescribed loose smut of, 869–870

Barriers to limit spread of cotton root rot, 991

BARTON-WRIGHT, E. C., Recent advances in botany, book review, 929–932

Basal rot of narcissus, 19

Basidiospore germination in Gymnosporangium, effect of temperature on, 728

Basisporium, effect of, on Gibberella on seedling corn, 682–685, 690; gallarum, on corn, 22; gallarum, relation of moisture to, in shelled corn, 15

Bean, effect of, on production of hydrogen sulphide from sulphur, 154; hybrids and varieties, resistance to curly top of sugar beet in, 207–216; species of resistant to curly top, 214

Beans, charcoal rot in, 637–641; disease of, caused by Phytomonas medicaginis var. phaseolicola, 85; Fusarium wilt, associated with charcoal rot in, 639; hitherto unreported disease of, 637–644; Rhizoctonia bataticola on, 637–644; snap, control of powdery mildew of, 7; susceptibility to charcoal rot, 643

Beet, sugar, Cercospora spot of, 29

Behavior of Bacillus amylovorus in soil, 657–660

Benzoin aestivale, host for Gloeodes pomigena, 937

BERG, ANTHONY, Apple measles, 4

Beta vulgaris, sporulation of Cercospora from, 20

Biography, LOUIS HERMANN PAMMEL, 669–674; of FREDERICK JOHN PRITCHARD, 201–205

Biologie der pflanzenbewohnenden parasitischen Pilze, book review, 721–722

Black, rot, of stocks, caused by Bacterium campestre, 270; -walnut canker, caused by a Nectria, 267–269

Blackeye cowpea, Rhizoctonia bataticola on, 637

BLANK, L. M., The pathogenicity of Fusarium conglutinans Wr. at low soil temperatures, 191–195

Bleaching leaves, method of, 925–926

Blight, frosty, of cotton, 229; of peppers, 775–780; of peppers, symptoms, 775; of walnut, control in Oregon, 1000; potato, 609–610; seedling, of dent corn, 12

Blue, eye, of shelled corn, 15; grass, effect of, on production of hydrogen sulphide from sulphur, 154; mold, in relation to cleaning and packing of apples, 879–898; mold, of apple, 604, 606; mold, of apples, 879–898

Book review, Biologie der pflanzenbewohnenden parasitischen Pilze, 721–722; Plant physiology, 197–200; Principles of soil microbiology, 871–872; Recent advances in botany, 929–932

Bordeaux, deposition of, 12; in fire-blight control, 15; mixture, for control of walnut blight, 1000; studies on deposition of, 857–860

Boron, deficiency of, relation to dwarfing and sterility of corn, 49

Botrytis, cinerea, effect of, on production of hydrogen sulphide from sulphur, 155; cinerea, mechanism of variation in, 953–964; cinerea, toxicity of pentathionic acid to spores of, 160; cinerea, toxicity of sulphuric acid to spores of, 160; cinerea, variation in, 11; stem infection, in pears, 269–270

Bottom rot of lettuce, dusting for, 27

Brassica oleracea, development of yellows on, at low temperature, 191–195

Breaking in tulips, analysis of, 998

Breeding of small fruits for keeping quality, 715–719
Bressman, E. N., Effect of bunt on height of wheat plants, 259–262; Lolium infected with bunt of wheat, 865
Brewer, P. H., see Kraybill, H. R.
Bromus inermis, pathogenicity of Bacterium translucens var. undulosum on, 4
Brown, J. G., Crown-gall-like hypertrophies on a conifer, 4–5
Brown, Nellie A., Another gall-forming Bacterium, 924–925; Some pathological studies on apple cankers, 397–414; and Lewis T. Leonard, Is Bacterium tumefaciens a mutant or pleomorphic form of Bacillus radiobacter, 5
Brown rot, peach, zinc-lime for, 421–424
Brussels sprouts, development of yellows on, at low temperatures, 191–195
Bryan, Mary K., An atypical lesion on cotton leaves caused by Bacterium malvacearum, 263–264; Color variations in bacterial pathogens, 787–788
Buffer-mannite solution, toxicity of pentathionic acid in, 160
Buhrer, Edna M., see Steiner, G., 927–928
Bunt, effect of delayed planting on control by copper-carbonate dust, 651–655; effect of different temperatures on reaction of Hope wheat to, 615–627; effect of, on height of wheat plants, 259–262; of wheat, association with loose smut and ergot, 10; of wheat, Lolium infected with, 865; production of chlamydospores in vegetative tissue of the wheat plant, 661–664; reaction of Martin wheat to physiologic forms of, 847–850; spores, odor of, 978–979
Burkholder, Walter H., Carbohydrate fermentation by certain closely related species in the genus Phytomonas, 699–707; and Carl E. F. Guterman, Synergism in a bacterial disease of Hedera helix, 781–784; and Karol Zaleski, Varietal susceptibility of beans to strains of Phytomonas medicaginis var. phaseolicola, and comparison of strains in culture, 85–94
Burnett, B., The longevity of the latent and veinbanding viruses of potato in dried leaf tissue, 1002
Butler, Wallace, see Stakman, E. C.

Cabbage, development of yellows disease of, at low temperatures, 191–195
Cacti, inoculations with Phymatotrichum omnivorum, 986
Caldwell, R. M., and G. M. Stone, Appressorium formation and penetration by leaf rust of wheat in relation to stomatal opening, 5–6; H. R. Kraybill, J. T. Sullivan, and L. E. Compton, Effect of wheat leaf rust on composition and yield of winter wheat, 5
Callus tissue, infection by crown gall and hairy-root organisms through, 174–176
Calogren in control of basal rot of narcissus, 19
Campbell, H., Enzymes with Cladosporium, 1002
Canker, Nectaria, of black walnut, 3; of avocado, 13; of black walnut, caused by Nectria, 267–269; of citrus, 14; perennial, apple, some pathological studies on, 397–414
Carapace spot of avocado, 13
Carbohydrate fermentation by closely related species in the genus Phytomonas, 699–707
Carpophilus hemipterus, 250
Carter, W., The pineapple mealybug (Pseudococcus brevipes (Ckl.)) and wilt of pineapples, 996–997; The spotting of pineapple leaves caused by Pseudococcus brevipes (Ckl.), the pineapple mealybug, 996
Cauliflower, development of yellows on, at low temperatures, 191–195
Celastrus scandens, host for Gloeodes pomigena, 938
Celery, late blight, distribution of two forms, 808; late blight, two forms of, 791–912; mosaic, eradication of weed-hosts of, 30; root and storage rot of, 21; two Septoria leaf spots of, 791–813
Cephalobus striatus in narcissus, 927–928
Cercis canadensis, host for Gloeodes pomigena, 938

Cercospora, beticola, effect of, on production of hydrogen sulphide from sulphur, 155; beticola, sporulation of, 20; davisii, sporulation of, 20; dubia, sporulation of, 20; leaf spot of beet, 29; sporulation of, in pure culture, 20; zebrina, sporulation of, 20
Cercosporella, gossypii, 230, 231, 238; herpotrichoides, influence of moisture on foot rot of winter cereals, 999–1000
Cereals, Rhizoctonia solani on, in South Australia, 827; winter, influence of moisture on development of Cercosporella foot rot of, 999–1000
Ceresan in control of basal rot of narcissus, 19
Chaetomella, decay of apple, 13
CHAPMAN, A. D., see LINDGREN, R. M.
Charcoal rot in maize and beans caused by Rhizoctonia bataticola, 637–644
CHAUDHURI, H., Sclerospora graminicola on bajra (Pennisetum typhoideum), 241–246
Chemical treatment of pecan rosette, 595–601
Chemicals, treating pecan rosette with, 979–981
Chenopodium, album, Cercospora of, 20
Cherry, inoculated with Gloeosporium perennans, 996; inoculated with Neofabraea malicorticis, 996; wild, inoculated with G. perennans, 996; wild, inoculated with N. malicorticis. 996
Chestnut, Phytophthora root disease of, 977–978
Cheyletus sp., 251
Chick pea, Phyllosticta rabiei on, 786
CHILDS, L., Observations on the ascospore discharge of pear-scab fungus, Venturia pyrina, 997
Chlamydospores, of Phytophthora, arecae, 219; palmivora, 223–224
Climatic conditions, relation of, to incubation period of apple sooty-blotch fungus, 945
Chloroses, insect, of rose, 65; of rose, 53
Chlorosis, iron, relation of pecan rosette to, 600; nutritional, of rose, 61; of avocado, 13; of corn, in sand culture, 33, 41; veinal, of rose, 63
CHRISTENSEN, CLYDE, Pestalozzia funerea variants resembling Monochaetia, 6
CHRISTENSEN, J. J., and T. W. GRAHAM, Physiologic specialization in Helminthosporium gramineum, 6
Chrysanthemum, Verticillium wilt of, 14
Citrullus vulgaris, response of, to Colletotrichum lagenarium, 16
Citrus, Clitocybe root rot of, 23; mildew, 870; Phomopsis of, 928; scab, caused by Sphaceloma, 481
Cladosporium, carpophilum, on peach, zinc-lime for, 420–421; **cyclaminis**, n. sp., cause of cyclamen stunt, 19; fulvum, effect of, on production of hydrogen sulphide from sulphur, 155; fulvum, toxicity of sulphur vapor, to spores of, 148; in perennial canker of apple, 399–411; mold, of tomato, resistance to, 20
Clearing leaves, method of, 925–926
Clitocybe tabescens, root rot of bananas, 23; root rot of citrus, 23
Clover, mildew of, fungus parasitic on, 31; phototropism of powdery mildew of, 31
Coccomyces hiemalis, effect of, on production of hydrogen sulphide from sulphur, 155
COCHRAN, L. C., A study of two Septoria leaf spots of celery, 791–812
COLE, J. R., see ALBEN, A. O.
Collard, development of yellows on, at low temperatures, 191–195
Colletotrichum, fruit rot of avocado, 13; lagenarium, response to Citrullus lagenarium, 16; lindemuthianum, effect of, on production of hydrogen sulphide from sulphur, 155
Collybia dryophila, effect of electromagnetic waves on, 282–299
Color variations in bacterial pathogens, 787–788
Commelina nudiflora, host of celery mosaic, 30
Composition of wheat, effect of leaf rust on, 5
COMPTON, L. E., see CALDWELL, R. M.
Condensation of sulphur vapor, 146
Conifer, crown-gall-like hypertrophies on, 4
Control, of damping off, tomato, 3; of

strawberry crinkle, by roguing, 713; powdery mildew of snap beans, 7
Convenient method of bleaching and clearing leaves, 925–926
COOK, HAROLD T., Control of powdery mildew of snap beans, 7
COOK, MELVILLE T., Plant pathology at the Fourth Congress of the International Society of Sugar Cane Technologists in Puerto Rico, 870; Rotting of sugar-cane cuttings in Porto Rico, 7
COOLEY, J. S., Botrytis stem infection in pears, 269–270
COOLEY, L. M., Black rot of stocks, 270; Mild streak of black raspberries, 905–910
Copper, carbonate dust, effect of delayed planting on control of bunt by, 651–655; dusts, adherence to foliage, 645–650; resinate, fungicidal value of, 861–864
Corn, Basisporium rot of, 22; dent, relation of maturity to seedling blight of, 12; Diplodia, studies of, 24; effect of sugary gene on resistance to Gibberella saubinetii, 675–697; G. moniliformis on, in the field, 29; nutritional deficiencies in, 33; parasitism of D. zeae on crown of, 18; relation of buds to smut infection in, 7; shelled, moisture of, in relation to fungi, 15; Stewart's disease of, 13; sweet, bacterial stalk rot of, 26
Cornus, alterniofolia, host for Gloeodes pomigena, 938; rugosa, host for G. pomigena, 938
Correlation of seed-coat color in bean with resistance to curly top of sugar beets, 212
COTTER, RALPH U., A new form of oat stem rust from a barberry area, 788–789; see STAKMAN, E. C.
Cotton, areolate mildew of, 229–240; areolate mildew of, hosts for, 229; areolate mildew of, importance, 229–230; areolate mildew of, names for, 229; areolate mildew of, range of, 229–230; areolate mildew of, symptoms of, 230; atypical lesion on leaves of, caused by Bacterium malvacearum, 263–264; root-rot conference, 983–993; root-rot fungus, effects of anaerobic conditions on growth of, 917–920; varietal susceptibility to Verticillium wilt, 770; Verticillium wilt of, 19, 767–773
Cottonwood, effect of, on production of hydrogen sulphide from sulphur, 154
Cowpea, root-knot nematode on, 333–339; susceptibility to charcoal rot, 643
Crab apple, flowering, inoculated with Gloeosporium perennans, 996; flowering, inoculated with Neofabraea malicorticis, 996
Cranberry fruit rots, 911–916; influence of weather on, 912–916
Crataegus mollis, host for Gloeodes pomigena, 937
CROMWELL, RICHARD O., see HUMPHREY, H. B.
CROSS, GEORGE L., see LINK, GEORGE, K. K.
Crown, gall, and hairy root, illustrations of overgrowths on apple following inoculation with mixture of, 172; gall, and hairy root organisms, infection through callus tissue by, 174–176; gall, hairy root, and wound overgrowth, development of, in glass cylinders, 179–189; gall, hairy root, and wound overgrowths, differentiation of types of, 171–174; gall, hairy root, and wound overgrowths, studies on the development of, in treated soil, 167–177; gall-like hypertrophies, on a conifer, 4; rot, of milo, 265–267
Crystallization of sulphur vapor, 146
Cucumber, effect of, on production of hydrogen sulphide from sulphur, 154; mosaic virus, 742; mosaic virus, effect of various hosts on thermal death point, 745–747; mosaic virus, influence of host species on resistance to aging in vitro, 749; mosaic virus, influence of host species on resistance to chemicals, 755; mosaic virus, influence of host species on tolerance for dilution, 753
Culture, growth in, of **Mycosphaerella areola**, n. sp., 235–236
Cultures, mixed, of Phytophthora arecae and palmivora, 224, 225; mixed, of Phytophthora from Aleurites and Areca, 225; mixed, of Phytophthora from Areca and Aleurites, 221; mixed, of Phytophthora from Areca and Santalum, 219–221, 225

Cupressus arizonica, crown-gall-like hypertrophies on, 4
Curly top, mechanical transmission of virus, 997–998; of sugar beet, resistance to, in bean hybrids and varieties, 207–216
Cyanide injury in rose, 66
Cyclamen, effect of, on production of hydrogen sulphide from sulphur, 154; stunt of, 19

DAHL, ARNOLD S., Zonate eye spot on turf grass, 7
Dahlia, coccinea, Entyloma Dahliae on, 869; effect of, on production of hydrogen sulphide from sulphur, 154; E. Dahliae, from Sumatra and Guatemala, 868
Damage caused by Puccinia graminis tritici in 1926, 1927, and 1928, 139
Damping off of tomato, cause and control of, 3
DANA, B. F., Some experiments with mechanical transmission of the curly-top virus, 997–998; and F. P. MCWHORTER, Mosaic disease of horse-radish, 1000–1001
Darkness, effect of, on infection type, Puccinia graminis tritici, 547–549
DAVEY, A. E., see HANSEN, H. N.
DAVIS, GLEN N., Relation of axillary buds to smut infection in corn, 7–8; and CHAS. S. REDDY, Seedling-blight stage of onion bulb rot, 8
Deficiencies, nutritional, in corn, 33
Delayed planting, effect of, on control of bunt by copper carbonate dust, 651–655
Dematiaceous fungus, cause of apple measles, 4
Dematium in perennial canker of apple, 399–411
DESAI, M. K., see UPPAL, B. N.
Diaporthe, citri (Faw.) Wolf, perfect stage of Phomopsis citri and P. californica, 928; perniciosa, perfect stage of P. mali, 922–924
DICKINSON, SYDNEY, Genetics of smut fungi, 8
DICKSON, J. G., see HOPPE, P. E.
Dicranopteris emarginata, associated with Phytophthora cinnamomi in soil, 1001–1002
DIETZ, S. M., see NAGEL, CLATUS M.
Differential, hosts for identification of physiologic forms of Puccinia graminis triciti, 107, 109; varieties, reactions of, to P. graminis tritici, 112–113
Differentiaiton of species of Phytomonas by carbohydrate fermentation, 699–707
Diplocarpon earliana, infection studies with, 21
Diplodia, natalensis on peanut, 379, 380; zeae, diseases of dent corn, 24; zeae, parasitism of, on crown of corn, 18; zeae, relation of moisture to, in shelled corn, 15
Dirca palustris, host for Gloeodes pomigena, 937
Dissemination, of rust spores, by invertebrates, 9–10; seed, in Fusarium wilt of pea, 253–257
Distribution, and prevalence of physiologic forms of Puccinia graminis tritici, 113–116, 121–123, 130–131; of mild streak of black raspberries, 905–910
Dithionic acid, toxicity of, to spores of Sclerotinia cinerea, 159
Dothiorella, cause of fruit rot of avocado, 13
Downy mildew of sorghum, 587–594
Drosophila ampilophila, 250
DUNEGAN, JOHN C., Occurrence of perfect stage of Phomopsis mali in United States, 922–924
Dusting for, bottom rot of lettuce, 27; control of powdery mildew of snap beans, 7
Dusts, chemical, for control of oat smuts, 429–441
Dwarfing of corn in sand culture, 38

EDDINS, A. H., see VOORHEES, R. K.
EDGERTON, C. W., see TIMS, E. C.
Effect, of bunt on height of wheat plants, 259–262; of delayed planting on the control of bunt by copper carbonate dust, 651–655; of different temperatures on the reaction of Hope wheat to bunt, 615–627; of the sugary gene in corn on resistance to seedling blight caused by Gibberella saubinetii, 675–697; on G. saubinetii on seedling corn, of the pres-

ence of seed-borne organisms, 682–685, 688–692
Effects of anaerobic conditions on growth of cotton-root-rot fungus, Phymatotrichum omnivorum, 917–920
EHRLICH, JOHN, and FREDERICK A. WOLF, Areolate mildew of cotton, 229–240
Electromagnetic waves, effect on fungi, 277–300
ELLIOTT, CHARLOTTE, F. A. WAGNER, and L. E. MELCHERS, Root, crown, and shoot rot of milo, 265–267
Elm, Dutch disease of, 17; effect of, on production of hydrogen sulphide from sulphur, 154
ELMER, O. H., Pathogenic and cultural comparisons of strains of Rhizoctonia solani, 8–9
Elsinoë cavavaliae on Lima bean, 481
Emilia sagittata, host for pineapple yellow spot, 306
End spot of avocado, 13
English ivy, bacterial disease of, 781–784
Entyloma Dahliae from Sumatra and Guatemala, 868
Environmental, influence on tissue changes, Puccinia graminis tritici, 525–538; relations, of watermelon wilt, 813–825
Epidemiology, rust, physiologic forms in relation to, 25
Epiphytology of Puccinia graminis tritici, physiologic specialization as a factor in, 105–142
Ergot of wheat, association with bunt, 10
Eriodendron anfractuosum, Bacterium malvacearum on, 867
Eriophyes fici, 251
Erysiphe, cichoracearum, fungus parasitic on, 31; polygoni, fungus parasitic on, 31
ESAU, KATHERINE, see MACKIE, W. W.
Ethyl mercury phosphate for control of bottom rot of lettuce, 27
Euchlaena mexicana, host for Sclerospora sorghi, 583; new host for Scl. graminicola var. Andropogonis-sorghi, 589
EVINGER, E. L., see WEISS, FREEMAN
Evonymus obovatus, host for Gloeodes pomigena, 938
Eye spot, zonate, of turf grasses, 7

EZEKIEL, WALTER N., see TAUBENHAUS, J. J.; J. J. TAUBENHAUS, and J. F. FUDGE, Growth of Phymatotrichum omnivorum in plant juices as correlated with resistance of plants to root rot, 459–474; J. J. TAUBENHAUS, and J. F. FUDGE, Growth of Phymatotrichum omnivorum in plant juices as correlated with resistance to root rot, 9; J. J. TAUBENHAUS, and J. F. FUDGE, Salts and soil reaction affecting growth of root-rot fungus in soil, 9

Fasciation in red pine, 15
FAULL, J. H., book review, Outline of forest pathology, 393–395
FAWCETT, H. S., Diaporthe citri (Faw.) Wolf, the perfect stage of Phomopsis citri and P. californica, 928; see JENKINS, ANNA E.
Fermentation of carbohydrates by species of Phytomonas, 699–707
Ferric, chloride, treatment of pecan rosette with, 598–599; sulphate, treatment of pecan rosette with, 598–599
Fertilizer applications, relation to cotton root rot, 989–990
Figs, relation of thrips and mites to occurrence of smut and molds in, 248–252; transmission of smut and molds in, 247–252
Fire blight, control, 15; two forms of, 23
FISCHER, E., und E. GÄUMANN, Biologie der pflanzenbewohnenden, parasitischen Pilze, book review, 721–722
FLOR, H. H., The effect of delayed planting on the control of bunt by copper carbonate dust, 651–655; The production of bunt chlamydospores in the vegetative tissue of the wheat plant, 661–664
Flyspeck of apple, 10
Fomes roseus, rot in yellow pine, 71
Foot rot of winter cereals, influence of moisture on development of Cercosporella, 999–1000
Formaldehyde, 267; for control of oat smuts, 429–441; in control of basal rot of narcissus, 19
FORWARD, DOROTHY F., The influence of altered host metabolism upon modifica-

tion of the infection type with Puccinia graminis tritici, p.f. 21, 493–555
Frankliniella tritici, 251; var. californicus, 251
Fraxinus americana, host for Gloeodes pomigena, 937
Fruit rots of cranberry, 911–916
FUDGE, J. F., see EZEKIEL, WALTER N.
Fungi, effect of, on production of hydrogen sulphide from sulphur, 154–156; miscellaneous, in figs, 251; precipitin-ring test applied to, 18; soil, Trichoderma lignorum as parasite of, 837–845; toxicity of naphthelene to, 30
Fungicidal value of pine-tar oil and copper resinate, 861–864
Fungicide, zinc-lime, for peach, 415–427
Fungicides, for control of Phytophthora heart rot of pineapple plants, 997; sulphur, relation of pentathionic acid and its component constituents to the toxicity of, 143–165
Fungus, parasitic on rust, 16
Fusaria from diseased milo plants, 266
Fusarium, basal rot of narcissus, 19; batatatis, effect of electromagnetic waves on, 282–299; cause of onion bulb rot and seedling blight, 8; conglutinans, effect of, on production of hydrogen sulphide from sulphur, 155; conglutinans Wr., pathogenicity of, at low soil temperatures, 191–195; fruit rot of avocado, 13; in perennial canker of apple, 399–411; lini, effect of, on production of hydrogen sulphide from sulphur, 155; martii var. minus, 374; martii var. phaseoli, causing peanut wilt, 372–377; moniliforme, associated with charcoal rot in corn in California, 637; moniliforme, perfect stage of, in the field, 29; moniliforme, relation to moisture in shelled corn, 15; moniliforme, toxicity of pentathionic acid to spores of, 160; moniliforme, toxicity of sulphuric acid to spores of, 160; niveum, physiologic forms of, 24; niveum, resistance of watermelons to, 30; niveum, watermelon wilt, environmental relations of, 813; orthoceras var. pisi, cause of Fusarium wilt of pea, 255; orthoceras, wilt of pea, 24; variation in, 11; vasinfectum, 768; vasinfectum, as cause of cotton wilt, 19; vasinfectum, on peanut, 382; wilt, associated with charcoal rot in beans, 639; wilt of cotton, absence from certain wilt-infected fields, 768; wilt of cotton, distribution in Mississippi, 771; wilt of pea, seed dissemination in, 253–257
Gamma rays, effect on fungi, 282–284
GARDNER, M. W., see BAINES, R. C.; see KRAYBILL, H. R.
GARRETT, S. D., see SAMUEL, GEOFFREY
GÄUMANN, E., see FISCHER, E.
Genetics, of smut fungi, 8; of Ustilago zeae, 20
Geranium, effect of, on production of hydrogen sulphide from sulphur, 154
Germination of oospores in Selerospora graminicola on bajra, 243–244
Gibberella, moniliformis, on corn in the field, 29; saubinetii, cause of seedling blight of corn, 12; saubinetii, relation of, to moisture in shelled corn, 15; saubinetii, resistance to, in corn, as affected by sugary gene, 675–697
GILDHAUS, EDGAR J., see VINSON, CARL G.
GILMAN, JOSEPH C., biography of LOUIS HERMANN PAMMEL by, 669–674
Girdle knots, experimental production of, on apple, 171–174; on apple, illustration of, 172
Gloeodes, pomigena, hosts for, 937–940; relation of climatic conditions to incubation period of, 945
Gloeosporium perennans, comparison with Neofabraea malicorticis, 995–996; host relations, 995–996; in tissue of perennial apple cankers, 397
Glomerella cingulata, effect of, on production of hydrogen sulphide from sulphur, 155; toxicity of pentathionic acid to spores of, 160; toxicity of sulphuric acid to spores of, 160
GODFREY, G. H., and JULIETTE OLIVEIRA, Development of root-knot nematode in relation to root tissues of pineapple and cowpea, 325–348
Gossypium, barbadense, host for areolate mildew fungus, 229, 238; hirsutum, host for areolate mildew fungus, 229, 238;

peruvianum, host for areolate mildew fungus, 229, 238; vitifolium, host for areolate mildew fungus, 229, 238

GRAHAM, T. W., see CHRISTENSEN, J. J.

GRANOVSKY, A. A., see LEVINE, M. N.; and M. N. LEVINE, Dissemination of cereal rust spores by terrestrial invertebrates, 9–10

GRANT, THEODORE J., see JOHNSON, JAMES

Grape, varietal resistance of, to Phymatotrichum, 3

Graphium ulmi, cause of elm disease, 17; toxicity of pentathionic acid to spores of, 160; toxicity of sulphuric acid to spores of, 160

Grasses, turf, zonate eye spot of, 7

GRAVATT, G. F., see MILBURN, MARGARET

GREEN, E. L., see HORSFALL, JAMES G.

Green-ear disease of bajra in India, 241

GROVES, A. B., Sooty blotch and flyspeck of apple, 10

Growth of Phymatotrichum omnivorum in plant juices, as correlated with resistance of plants to root rot, 459–474; correlated with resistance to root rot, 9

Grubs, white, relation to Stewart's disease, 13

GUTERMAN, CARL E. F., see BURKHOLDER, WALTER H.

Gymnocladus dioica, host for Gloeodes pomigena, 938

Gymnosporangium, germinale, physiologic form of, 731–732; germinale (Schw.) Kern, 723–740; germinale (Schw.) Kern, aeciospore germination, 737; germinale (Schw.) Kern, basidiospore germination, effect of temperature on, 728; germinale (Schw.) Kern, inoculations in orchard, 731; germinale (Schw.) Kern, teliospore germination, effect of temperature on, 728; globosum Farl., 723–740; globosum Farl., aeciospore germination, 737; globosum Farl., basidiospore germination, effect of temperature on, 728; globosum Farl., heterothallism in, 735–736; globosum Farl., inoculations in orchard, 730; globosum Farl., teliospore germination, effect of temperature on, 728; juniperi-virginianae Schw., 723–740; juniperi-virginianae Schw., aeciospore germination, 736; juniperi-virginianae Schw., aeciospore longevity, 738; juniperi-virginianae Schw., basidiospore germination, effect of temperature on, 728; juniperi-virginianae Schw., heterothallism in, 734–735; juniperi-virginianae Schw., inoculations in orchard, 729; juniperi-virginianae Schw., relation of wounds of apple leaves to susceptibility, 733; juniperi-virginianae Schw., teliospore germination, effect of temperature on, 728

Gypsophila paniculata, bacterial galls of, 924–925

HAASIS, FERDINAND W., Laboratory methods for investigating relation of moisture of wood and fungal growth, 71–84; A preliminary study on the use of indelible pencils as indicators of moisture content of wood, 899–904

Hairy root, and crown gall, illustrations of overgrowths on apple following inoculation with mixture of, 172; and crown-gall organisms, infection through callus tissue by, 174–176; crown gall, and wound overgrowths, development of, in glass cylinders, 179–189; crown gall, and wound overgrowths, differentiation of types of, 171–174; crown gall, and wound overgrowths, studies on the development of, in treated soil, 167–177

HANNA, W. F., Association of bunt of wheat with loose smut and ergot, 10–11; The odor of bunt spores, 978–979; and W. POPP, Physiologic forms of loose smut of wheat, 11

HANSEN, H. N., and A. E. DAVEY, Transmission of smut and molds in figs, 247–252; and RALPH E. SMITH, Analysis of variation in Botrytis cinerea by single-spore cultures, 11; and RALPH E. SMITH, The mechanism of variation in imperfect fungi: Botrytis cinerea, 953–964

HARVEY, H. W., see MILLER, J. H.

Hawthorn, inoculated with Gloeosporium perennans, 996; inoculated with Neofabraea malicorticis, 996; rust, heterothallism in, 735–736; rust, on apple, 725

HEALD, F. D., see BAKER, K. F.; see HUBER, G. A.
Hedera helix, bacterial disease of, 781–784
Height of wheat plants, effect of bunt on, 259–262
Heliothrips fasciatus, 251
Helminthosporium, giganteum, cause of zonate eye spot of turf grasses, 7; gramineum, physiologic specialization in, 6; sigmoideum, conidial stage of Sclerotium oryzae, 28
HENDERSON, R. G., see PETTINGER, N. A.
HENDERSON, W. J., Properties and host reaction of onion to yellow-dwarf virus, 11
Herbarium specimens of citrus scab and canker, 14
Hertzian waves, effect of, on fungi, 295
Heterodera radicicola, 325–348; egg production, 339–342; in cowpea, 333–339; in pineapple, 328–333
Heterothallism in Phytophthora, arecae, 221–222; palmivora, 225, 226
Hibiscus, Turk's cap, resistance to Phymatotrichum root rot, 453–458
HIGGINS, B. B., Ripe rot of red pepper, 12
HILDEBRAND, E. M., see RIKER, A. J.
HINES, LEE, see STAKMAN, E. C.
Hitherto unreported disease of maize and beans, 637–644
HOCKENYOS, GEORGE L., and GEORGE R. IRWIN, Studies on Bordeaux deposition, 12, 857–860
HOLBERT, J. R., see HOPPE, P. E.; see SMITH, A. L.
HOPPE, P. E., J. R. HOLBERT, and J. G. DICKSON, Maturity of seed and seedling blight in corn, 12
Hordeum jubatum, pathogenicity of Bacterium translucens var. undulosum on, 4
Hormodendrum spp. in figs, 251
HORNE, WM. T., Avocado diseases in California, 12–13
Horse-radish, mosaic disease of, 1000–1001
HORSFALL, JAMES G., Z. I. KERTESZ, and E. L. GREEN, Effects of root rot on physiology of peas, 13
Host, age, effect on infection with Puccinia graminis tritici, 538–539; metabolism, influence of altered, on infection with P. graminis tritici, 493–555; new, for Phytophthora palmivora, 222–227
Hosts, differential, for identification of physiologic forms of Puccinia graminis tritici, 107, 109
HOWARD, N. O., biography of, 491–492
HUBER, G. A., **Aspergillus sclerotiorum,** n. sp., and its relation to decay of apples, 999; Fungi present on apples and their relation to decay, 13; see JONES, L. K.; and F. D. HEALD, The sources of contamination of the normal apple and spore load, 1001
HUBERT, ERNEST E., An outline of forest pathology, book review, 393–395
HUMPHREY, H. B., book review, Plant physyiology, 197–200; and RICHARD O. CROMWELL, A correction, 103
Hybridization in Phytophthora, 225, 226
Hybrids and varieties of bean, resistance to curly top of sugar beets in, 207–216
Hydrogen, -ion concentration, effect of, on permeability of spore walls of Sclerotinia cinerea, 164; -ion concentration, effect of, on toxicity of pentathionic acid, 162–163; sulphide, effect of apple on production of, from sulphur, 154; sulphide, effect of bean on production of, from sulphur, 154; sulphide, effect of blue grass on production of, from sulphur, 154; sulphide, effect of cottonwood on production of, from sulphur, 153; sulphide, effect of cucumber, on production of, from sulphur, 154; sulphide, effect of Cyclamen, on production of, from sulphur, 154; sulphide, effect of dahlia, on production of, from sulphur, 154; sulphide, effect of elm, on production of, from sulphur, 154; sulphide, effect of fungi on production of, from sulphur, 154–156; effect of geranium on production of, from sulphur, 154; sulphide, effect of higher plants on production of, 153–154; sulphide, effect of maple on production of, from sulphur, 154; sulphide, effect of onion on production of, from sulphur, 154; sulphide, effect of peach on production of, from sulphur, 154; sulphide, effect of potato on production of, from sulphur, 154; sulphide, effect of red oak on production of, from sulphur, 154; sulphide, effect of rose on production of, from sulphur, 154; sul-

phide, effect of strawberry on production of, from sulphur, 154; sulphide, effect of tomato on production of, from sulphur, 154; sulphide, from sulphur, effect of Alternaria sp., on production of, 155; sulphide, from sulphur, effect of Armillaria mellea on production of, 155; sulphide, from sulphur, effect of Aspergillus sp. on production of, 155; sulphide, from sulphur, effect of Botrytis cinerea on production of, 155; sulphide, from sulphur, effect of Cercospora beticola on production of, 155; sulphide, from sulphur, effect of Cladosporium fulvum on production of, 155; sulphide, from sulphur, effect of Coccomyces hiemalis on production of, 155; sulphide, from sulphur, effect of Colletotrichum lindemuthianum on production of, 155; sulphide, from sulphur, effect of Fusarium conglutinans on production of, 155; sulphide, from sulphur, effect of F. lini on production of, 155; sulphide, from sulphur, effect of Glomerella cingulata on production of, 155; sulphide, from sulphur, effect of Penicillium sp. on production of, 155; sulphide, from sulphur, effect of Phoma pomi on production of, 155; sulphide, from sulphur, effect of Phomopsis sp. on production of, 155; sulphide, from sulphur, effect of Rhizoctonia solani on production of, 155; sulphide, from sulphur, effect of Rhizopus nigricans on production of, 155; sulphide, from sulphur, effect of Sclerotinia cinerea on production of, 155; sulphide, from sulphur, effect of S. sclerotiorum on production of, 155; sulphide, from sulphur, effect of Venturia inaequalis on production of, 155; sulphide, from sulphur, effect of willow-canker fungus on production of, 155; sulphide, production of, in ground sulphur, 152; sulphide, toxicity of, in aqueous solution to spores of S. cinerea, 156–157; sulphide, toxicity of, in gaseous condition to spores of S. cinerea, 156

Identification of physiologic forms of Puccinia graminis tritici, 108–113; key for, 110–111

Immunity in plants, 95

Imperfect fungi, mechanism of variation in, 953–964

Incubation period, of apple sooty-blotch fungus, relation of climatic conditions to, 945; of pineapple yellow-spot virus, 318–320; of Puccinia graminis tritici, 503–509

Infection, experiments with Phytophthora on Aleurites fordi, 225; of stem, in pears, by Botrytis, 269–270; studies on strawberry, 21; type, Puccinia graminis tritici, 493–555; type, P. graminis tritici, effect of darkness on, 500–549; type, P. graminis tritici, experiments on detached leaves, 547–549; with P. graminis tritici, effect of age of host on, 538–539; with P. graminis tritici, effect of light on, 530–537

Infra-red rays, effect of, on fungi, 295

Injury of tomatoes by sulphur dioxide, 267–268

Insects, dissemination of rust spores by, 9–10

International Society of Sugar Technologists, plant pathology, Fourth Congress of Puerto Rico, 870

Invertebrates, terrestrial, dissemination of rust spores by, 9

Iron, chlorosis, relation of pecan rosette to, 600; salts, treatment of pecan rosette with, 598–599

IRWIN, GEORGE R., see HOCKENYOS, GEORGE L.

IVANOFF, S. S., see RIKER, A. J.; Stewart's disease of corn, 13–14

JAYNES, H. A., Pineapple disease (Thielaviopsis Ethaceticus) on sugar cane at Tucumán, Argentina, 667–668

JENKINS, ANNA E., and H. S. FAWCETT, Scab and canker on citrus in herberia in England and United States, 14

JOHNSON, BURT, Starch near wounds in Burley tobacco, 14

JOHNSON, FRANK H., Effects of electromagnetic waves on fungi, 277–300

JOHNSON, JAMES, and THEODORE J. GRANT, JR., The properties of plant viruses from different host species, 741–757

JONES, L. K., A new method of inoculating

with viruses, 998–999; The sources of the viruses that cause streak of tomato, 999; and GLENN A. HUBER, Verticillium wilt of chrysanthemum, 14–15
"June yellows" of strawberry, 22

Kale, development of yellows on, at low temperatures, 191–195
KAUFFMAN, CALVIN HENRY, biography of, 271–275; obituary note, 489
Keeping quality as a factor in selecting new varieties of small fruits, 715–719
KEITT, G. W., LUTHER SHAW, and A. J. RIKER, Bactericides in relation to Bacillus amylovorus and fire-blight control, 15
KERTESZ Z. I., see HORSFALL, JAMES G.
KIENHOLZ, J. R., Perennial canker and anthracnose fungi: host relations and cultural differences, 995–996
KIENHOLZ, RAYMOND, Fasciation in red pine, 15
KIGER, C. M., see ALEXANDER, L. J.
KOEHLER, BENJAMIN, Moisture of shelled corn in relation to fungus growth, 15
KOHL, EDWIN J., Apple blotch, 349–369
Kohl-rabi, development of yellows on, at low temperatures, 191–195
KOKOSKI, F. J., see STREETER, L. R.
KRAYBILL, H. R., see CALDWELL, R. M., P. H. BREWER, R. W. SAMSON, and M. W. GARDNER, A noninfectious leaf-deforming principle from mosaic tomato plants, 629–636
KUNKEL, L. O., Local lesions in Aucuba mosaic of tomato, 16

LAURITZEN, J. I., Factors affecting infection and decay in sweet potatoes, 16
LAYTON, DUKE V., Response of Citrullus vulgaris to Colletotrichum lagenarium, 16
LEACH, J. G., see LEVINE, M. N.
Leaf, -deforming principle, noninfectious, from mosaic tomato plants, 629–636; spot, Cercospora, of beet, 29; spot, Phytophthora, of Aleurites fordi, 222; temperature, relation to lettuce tipburn, 851–855
Leaves, method for bleaching and clearing, 925–926
LECLERG, E. L., Leaf temperature of lettuce and its relation to tipburn, 851–855
Lenticels, illustration of development of, in saturated air, 182
LEONARD, LEWIS T., see BROWN, NELLIE A.
Leptothrips mali, 251
Lesion, atypical, on cotton leaves caused by Bacterium malvacearum, 263–264
LESTER-SMITH, W. C., Citrus mildew, 870
Lettuce, controlling bottom rot of, 27; tipburn, relation of leaf temperature to, 851–855
LEVINE, M. N., see GRANOVSKY, A. A.; see STAKMAN, E. C.; A. A. GRANOVSKY, and J. G. LEACH, New parasites of cereal rusts, 16
LEWIS, R. D., see ALBEN, A. O.
Light, effect of, on vaporization of sulphur, 146–147; Puccinia graminis tritici, effect of exposure to, in host tissue appearance, 540; P. graminis tritici, effect of short exposures to, on rust development and infection type, 540–547
Lima-bean scab caused by Elsinoë cavavaliae, 481
LIMING, O. N., Present status of Dutch elm disease, 17; Relation of pentathionic acid and its component constituents to the toxicity of sulphur fungicides, 143-165
LINDGREN, R. M., T. C. SCHEFFER, and A. D. CHAPMAN, Control of strain and mold fungi of stored lumber and logs, 17
LINFORD, MAURICE B., Transmission of pineapple yellow spot, 301–324
LINK, ADELINE DES., see LINK, GEORGE K. K.
LINK, GEORGE K. K., Etiological concepts of plant pathology, 17–18; ADELINE DES., GEORGE L. CROSS, and HAZEL W. WILCOX, the precipitin-ring test applied to fungi, 18
Liothrips ilex, 251
Liriodendron tulipifera, host for Gloeodes pomigena, 938
Little leaf of avocado, 13
Logs, molds and stain of stored, 17
Lolium, infected with bunt of wheat, 865; multiflorum, infected with Tilletia levis, 865; perenne, infected with T. levis, 865
Loose smut, barley, undescribed, 869–870
Losses from cotton root-rot, estimation of, 988
Lubricating oil, effect of, on potatoes, 31

Lumber, molds and stain of stored, 17

MACKIE, W. W., A hitherto unreported disease of maize and beans, 637–644; and KATHERINE ESAU, A preliminary report on resistance to curly top of sugar beet in bean hybrids and varieties, 207–216
Macrosporium, solani, on tomato fruit, 613–614; tomato, 613
MADER, E. O., see STREETER, L. R.
Magnesium, deficiency of, in corn, 34, 41
MAINS, E. B., biography of CALVIN HENRY KAUFFMAN, 271–275
Maize, charcoal rot in, 637; disease caused by Rhizoctonia bataticola, 637–644; Fusarium moniliforme, associated with charcoal rot in, 637; hitherto unreported disease of, 637–644
Malus, rivularis, inoculated with Gloeosporium perennans, 996; rivularis, Neofabraea malicorticis on, 995, 996; species, susceptibility of, to Venturia inaequalis, 21
Malvaceae, susceptibility of, to Phymatotrichum root rot, 454, 455
Malvaviscus conzattii, resistance to Phymatotrichum root rot, 453–458
Manganese, deficiency of, in corn, 46
Maple, effect of, on production of hydrogen sulphide from sulphur, 154
Massachusetts, outbreaks of cranberry fruit rots in, 911–916
MASSEY, L. M., and PAUL E. TILFORD, Cyclamen stunt, 19
Matthiola incana var. annua, black rot of, 270
MCCUBBIN, W. A., Rôle of diseases in plant quarantines, 921–922
MCNEW, GEORGE L., Parasitism of Diplodia zeae on crown of corn plants, 18
MCWHORTER, F. P., Narcissus-mosaic symptoms, 998; A preliminary analysis of tulip breaking, 998; see DANA, B. F.
Mealybug, cause of spotting of pineapple leaves, 996; causes wilt of pineapple, 996–997
Measles of apple caused by dematiaceous fungi, 4
MEHRLICH, F. P., The fungicidal control of Phytophthora heart rot of pineapple plants, 997; Physiology and pathogenicity of species of Phytophthora that cause heart rot of pineapple plants, 1001–1002
Melanorhiza of avocado, 13
Melanose of citrus, 328
MELCHERS, L. E., see ELLIOTT, CHARLOTTE
Melilotus officinalis, Cercospora of, 20
Mercuric chloride in control of basal rot of narcissus, 19
Method of bleaching and clearing leaves, 925–926
Methods, inoculation and cultural, for Puccinia graminis tritici, 107–108
Mexico, occurrence of Puccinia graminis tritici in 1928, 134
Microsphaera alni, fungus parasitic on, 31; vaccinii, fungus parasitic on, 31
Migration of physiologic forms of Puccinia graminis tritici, 116–118, 125–126, 132–136
MILBURN, MARGARET, and G. F. GRAVATT, Preliminary note on a Phytophthora root disease of chestnut, 977–978
Mild streak of black raspberries, 905–910
Mildew, areolate, of cotton, 229–240; citrus, 870; clover, fungus parasitic on, 31; downy, of sorghum, 587–594; false, of cotton, 229; gray, of cotton, 229; powdery, of clover, phototropism of, 31; powdery, of snap beans, 7
MILES, L. E., Control of basal rot of narcissus, 19; and T. D. PERSONS, Verticillium wilt of cotton in Mississippi, 19, 767–773
MILLER, E. C., Plant physiology, book review, 197–200
MILLER, J. H., and H. W. HARVEY, Peanut wilt in Georgia, 371–383
MILLER, PAUL R., Pathogenicity of three red-cedar rusts that occur on apple, 723–740
MILLER, P. W., Walnut blight and its control in Oregon, 1000
Milo, bacterium from diseased plants, 266; Fusaria from diseased plants, 266; root, crown and shoot rot of, 265–267
Minor elements, relation of, to cold resistance of corn, 49; relation to corn chlorosis, 44

Mites, in figs, 251; relation of, to occurrence of smut and molds in figs, 248–252
Moisture, content, of wood, use of indelible pencils as indicators of, 899–904; effect of, on vaporization of sulphur, 146–147; relation of, in wood to fungal growth, 71
Mold, leaf, of tomato, resistance to, 20
Molds, in figs, relation of thrips and mites to occurrence of, 248–252; transmission of, in figs, 247–252
Monochaetia, Pestalozzia variants resembling, 6
Monocotyledons, resistance to Phymatotrichum root rot, 443–452
MOORE, M. B., Genetics of Ustilago zeae, 20
MORSE, WARNER JACKSON, obituary note, 489
Mosaic, Aucuba, of tomato, local lesions in, 16; celery, control of, by weed host eradication, 30; diseases, of tobacco, decomposition of the safranin-virus precipitate, 965–975; in sugar-cane varieties, 27; of bean distinguished from curly top, 213; of horse-radish, 1000–1001; of rose, 53; of tobacco, local lesions of, 14; precipitate of virus of, 29; reaction of tomatoes to, 22; symptoms in narcissus, 998; tobacco, particle size of virus of, 29; tomato plants, noninfectious leaf-deforming principle from, 629–636; virus, tobacco, decomposition of safranin precipitation of, 29; yellow-tomato inoculation, of tomato, with virus of, 22
Mountain ash, inoculated with Gloeosporium perennans, 996; inoculated with Neofabraea malicorticis, 996
Mycosphaerella, areola, n. sp., ascigerous stage of, 234–235; **areola,** n. sp., cause of areolate mildew of cotton, 238; **areola,** n. sp., conidial stage of, 231; **areola,** n. sp., growth in culture of, 235–236; **areola,** n. sp., pathogenicity of, 236; **areola,** n. sp., spermogonial stage of, 234; fragariae, infection studies with, 21; gossypina, 238; tulasnei, associated with Venturia pyrina in pear-scab lesions, 997
NAGEL, CLATUS M., and S. M. DIETZ, Sporulation of five species of Cercospora in pure culture, 20
Nailhead spot of tomato fruit, 613–14
NANCE, NELLIE W., see STEVENS, NEIL E.
Naphthalene, toxicity of, to Sclerotium rolfsii, 30
Narcissus, brown-ring symptoms in, 927–928; control of basal rot of, 19; mosaic symptoms, 998
NEAL, D. C., and R. E. WESTER, Effects of anaerobic conditions on growth of cotton-root-rot fungus, Phymatotrichum omnivorum, 917–920
Nectria, canker of black walnut, 267–269; cause of canker of black walnut, 3
Nematodes, as quarantine problem, 481; brown-ring symptoms in narcissus attacked by, 927–928
Neofabraea malicorticis, comparison with Gloeosporium perennans, 996; host relations, 995–996
NEWHALL, A. G., Greenhouse tomato resistant to Cladosporium leaf mold, 20–21; Root and storage rot of celery caused by Phoma apiicola, 21
Nicotiana spp., local lesions of Aucuba mosaic in, 16
Noninfectious leaf-deforming principle from mosaic tomato plants, 629–636
Nonspecificity of brown-ring symptoms in narcissus attacked by nematodes, 927–928
Notable outbreaks of cranberry fruit rots in Massachusetts, 911–916
Nursery stock as carrier of Phymatotrichum, 26
Nutrient solution for corn in sand culture, 39, 40, 47

Oak, red, effect of, on production of hydrogen sulphide from sulphur, 154
Oat, stem rust, new form, 788
Oats, covered smut, genetics of, 8; pathogenicity of Bacterium translucens var. undulosum on, 4; smut control, by seed treatments with chemical dusts and formaldehyde, 429–441
Obituary notes, 488, 489

Occurrence of perfect stage of Phomopsis mali in United States, 922–924
Oidium tingitaninum, citrus mildew, 870
Oiled wraps in control of apple scald, 603–607
O'Kane, W. C., Principles of plant quarantine, 933–935
Oliveira, Juliette, see Godfrey, G. H.
Ong, E. R. de., Fungicidal value of pine-tar oil and copper resinate, 861–864
Onion, bulb rot, seedling-blight stage of, 8; effect of, on production of hydrogen sulphide from sulphur, 154; seedling-blight stage of bulb rot of, 8; yellow dwarf of, 11
Oogonia, of Phytophthora arecae, measurements of, 221, 225; of P. palmivora, measurements of, 225
Oospores, from Phytophthora arecae in mixed cultures, 219–221; germination of, in Sclerospora graminicola on bajra, 243–244; of P. arecae, measurements of, 221, 225; of P. palmivora, in mixed cultures, 224–225; of P. palmivora, measurements of, 225; viability of, in Scl. graminicola on bajra, 244–245
Ophiobolus oryzinus on rice, 28
Orton, C. R., see Stanley, A. R.
Overgrowth, wound, crown gall, and hairy root, development of, in glass cylinders, 179–189
Overgrowths, on apple, illustrations of, following inoculations with mixture of crown-gall and hairy root organisms, 172; on apple, induced in glass cylinder, illustrations of, 182, 187; production of, on stem tissue, 183–188; wound, studies on the development of, in treated soil, 167–177
Oxygen, effect of, on toxicity of sulphur, 162

Palm, B. T., Eriodendron as host of Bacterium malvacearum, 867–868; A note on Entyloma Dahliae Syd. from Sumatra and Guatemala, 868-869
Palmiter, D. H., Variability of Venturia inaequalis in culture and host relations, 21
Palustrex, pine-tar oil, fungicidal value of, 861–864
Pammel, Louis Hermann, biography of, 669–674; obituary note, 488
Parasite, Trichoderma lignorum, of other soil fungi, 837–845
Parasitism of Diplodia zeae, 18
Pathogenicity, of apple sooty-blotch fungus, 937–952; of Fusarium conglutinans Wr. at low soil temperatures, 191–195; of Mycosphaerella areola, 236; of Rhizoctonia solani, strains of, 8
Pathological studies on apple cankers, 397
Pathology, plant, at Fourth Congress of International Society of Sugar Cane Technologists, Puerto Rico, 870
Patty, Frank A., see Quick, Clarence R.
Pea, Fusarium wilt of, 24; root rot of, effects on physiology of, 13; seed dissemination in Fusarium wilt of, 253–257
Peach, effect of, on production of hydrogen sulphide from sulphur, 154; inoculated with Neofabraea malicorticis, 996; inoculated with perennial canker fungus, 996; zinc-lime a fungicide for, 415–427
Peanut wilt in Georgia, 371–383
Pear, -blight organism, behavior in soil, 657–660; scab, observations on ascospore discharge, 997; successful inoculations with hawthorn rust, 730
Pears, stem infection by Botrytis, 269–270
Pecan rosette, chemical treatment of, 595–601; relation of, to iron chlorosis, 600; treating with chemicals, 979–981
Pencils, indelible, as indicators of moisture content of wood, 899–904
Penicillium, effect of, on Gibberella, on seedling corn, 682–685, 690; expansum, causing blue mold of apples, 879–898; expansum, importance of lenticel infection of apples by, 1000; in perennial canker of apple, 403; relation of moisture to, in shelled corn, 15; sp., effect of, on production of hydrogen sulphide from sulphur, 155; spp., in figs, 251; spp., in sulphur fungicides, 785
Pennington, Leigh Humboldt, biography of, 873–877
Pennisetum typhoideum, Sclerospora graminicola on, 241
Pentathionic acid, and its component constituents, relation of, to toxicity of sulphur fungicides, 143–165; effect of hy-

drogen-ion concentration on toxicity of, 162–163; occurrence of, 157; preparation of, 157–158; stability of, 158; stability of, in presence of fungus spores, 162–163; toxicity of, at a distance, to spores of Sclerotinia cinerea, 160–161; toxicity of, to spores of Botrytis cinerea, 160; toxicity of, to spores of Fusarium moniliforme, 160; toxicity of, to spores of Glomerella cingulata, 160; toxicity of, to spores of Graphium ulmi, 160; toxicity of, to spores of pathogenic fungi, 160; toxicity of, to spores of Phoma pomi, 160; toxicity of, to spores of Phomopsis sp., 160; toxicity of, to spores of S. cinerea, 159–160; toxicity of, to spores of Thielavia basicola, 160; toxicity of, to spores of Verticillium alboatrum, 160; volatility of, 158

Pepper, red, ripe rot of, 12

Perennial canker and anthracnose fungi: relations and cultural differences, 995–996

Permeability of spore wall of Sclerotinia cinerea, effect of hydrogen-ion concentration on, 164

PERSONS, T. D., see MILES, L. E.

Pestalozzia funerea, races and variants resembling Monochaetia, 6

Petri-dish cultures, modified method for apple rusts, 732

PETTINGER, N. A., R. G. HENDERSON, and S. A. WINGARD, Some nutritional disorders in corn grown in sand cultures, 33–51

Phaseolus, lunatus, not attacked by charcoal rot, 643; lunatus sieva, attacked by charcoal rot, 643; multiflorus, attacked by charcoal rot, 643; vulgaris, attacked by charcoal rot, 643; vulgaris, Rhizoctonia bataticola on, 637–644

Phlyctaena magnusiana (Allesch.) Bres., synonym for Septoria apii, 809

Phoma, apiicola, celery rot caused by, 21; pomi, effect of, on production of hydrogen sulphide from sulphur, 155; pomi, toxicity of pentathionic acid to spores of, 160; pomi, toxicity of sulphuric acid to spores of, 160; variation, in, 11

Phomopsis, californica, perfect stage of, 928; citri, perfect stage of, 928; mali, perfect stage of, 922–924; sp., effect of, on production of hydrogen sulphide from sulphur, 155; sp., toxicity of pentathionic acid to spores of, 160; sp., toxicity of sulphuric acid to spores of, 160

Phototropism of germ tubes of clover powdery mildew, 31

Phyllosticta, rabiei, on chick pea, 786–787; solitaria, 349–369

Phymatotrichum, barriers for, 26; nursery plants as carriers of, 26; omnivorum, a field-plot test of sulphur for the gradual control of root rot, 989; omnivorum, concentration of soluble salts as affecting growth in soil, 990; omnivorum, date of wilting as related to losses, 988; omnivorum, effect of anaerobic conditions on growth, 984; omnivorum, effect of deep tillage on root rot, 992; omnivorum, effect of fertilizer in relation to root-rot control, 989; omnivorum, effect of rotation on root rot, 992; omnivorum, effect of salts and reaction on, 9; omnivorum, effect of subsoiling on occurrence and spread, 991; omnivorum, effects of anaerobic conditions on growth of, 917–920; omnivorum, estimation of cotton-crop losses, 988; omnivorum, field-plot tests with some soil disinfectants, 991; omnivorum, further inoculation experiments with monocotyledons, 986; omnivorum, greenhouse studies on, 984; omnivorum, growth in plant juices as correlated with resistance of plants to root rot, 986; omnivorum, growth in synthetic media, 984; omnivorum, growth of, in plant juices, 459–474; omnivorum, growth of, in plant juices, correlated with resistance to, 9; omnivorum, histological studies on the process of infection, 986; omnivorum, indigenous to Arizona deserts, 987; omnivorum, inoculation experiments with cacti, 986; omnivorum, inoculation experiments with physiologic forms, 983; omnivorum, inoculations with spores, 985–986; omnivorum, laboratory tests of initial and residual efficiency of disinfectants, 991; omnivorum, manurial experiment on root-rot control, 989; omnivorum, morphological behavior of different isolations, 983;

omnivorum, new hosts, symptoms, 986; omnivorum, nursery plants as possible carriers, 987; omnivorum, nutritional studies on growth in artificial culture, 984; omnivorum, occurrence of root rot in certain alluvial soils, 988; omnivorum, possible occurrence in other countries, 987; omnivorum, preliminary irradiation studies, 984; omnivorum, reaction of cotton seedlings grown in the presence of pure cultures of, 986; omnivorum, resistance in alfalfa varieties and other legumes, 993; omnivorum, resistance in grape varieties to, 993; omnivorum, resistance in nursery and ornamental plants, 993; omnivorum, resistance in nursery plants, 993; omnivorum, resistance of grape to, 3; omnivorum, response of cotton to commercial fertilizers under root-rot conditions, 990; omnivorum, results of a 42-month fallow, 992; omnivorum, rôle of winter and spring vegetation at Temple, Texas, 987; omnivorum, rôle of winter and spring vegetation in south Texas, 987; omnivorum, root-rot barriers in the field, 991; omnivorum, root rot in relation to soil types and moistures, 988; omnivorum, root rot in river bottoms, 987; omnivorum, root rot in rotation, 992; omnivorum, root rot in various rotation and cultural treatments, 992; omnivorum, root-rot losses in Texas, 988; omnivorum, root-rot occurrence in relation to chemical characteristics of soils, 988–989; omnivorum, sclerotia distribution of, in infested areas, 984–985; omnivorum, sclerotia, factors affecting production of, 985; omnivorum, sclerotia, laboratory studies on the longevity of, 985; omnivorum, sclerotia, observations on the formation of, in culture, 985; omnivorum, sclerotia, occurrence of, in nature, 985; omnivorum, sclerotia, occurrence of, with regard to soil types and hosts, 985; omnivorum, sodium chloride, gasoline, and some other disinfectants, 991; omnivorum, soil-reaction correlation with root rot, 939; omnivorum, sulphur barriers and graminaceous crop barriers, 991; omnivorum, treatment of cotton root rot with ammonia, 990; omnivorum, treatment of primary centers of infection with formalin, 990; root rot, 443, 453, 459; root rot, resistance of Turk's-cap hibiscus to, 453-458; root rot, susceptibility of Malvaceae to, 454, 455

Physalis pubescens, Cercospora of, 20

Physiologic, form, new, of oat stem rust, 788–789; forms, of Gymnosporangium germinale, 731–732; forms of Puccinia graminis avenae, 106; forms, of P. graminis phleipratensis, 106; forms, of P. graminis produced on barberry, 25; forms, of P. graminis secalis, 106; forms, of P. graminis tritici, 105; forms, of P. graminis tritici, comparison of United States survey with Canadian survey for, 118–120, 127, 136; forms, of P. graminis tritici, differential hosts for the identification of, 107, 109; forms, of P. graminis tritici, expected from barberries, 120–121, 127–130, 136–138; forms, of P. graminis tritici, identification of, 108–113; forms, of P. graminis tritici, isolated, identity and nature of, 116, 123–125, 131–132; forms, of P. graminis tritici, key for identification of, 110–111; forms, of P. graminis tritici, migration of, 116–118, 125–126, 132–136; forms, of P. graminis tritici, prevalence and distribution of, 113–116, 121–123, 130–131; forms, of P. graminis tritici, reactions of differential varieties to, 112–113; forms, of P. graminis tritici, surveys for, 107, 113–138; forms, of stem rust in relation to epidemiology, 25; forms, of Tilletia tritici, 847–850; forms, of Ustilago tritici, 11; specialization, as a factor in the epiphytology of P. graminis tritici, 105–142; specialization, in Helminthosporium gramineum, 6; specialization, in P. graminis agrostidis, 106; specialization, in P. graminis poae, 106; specialization, of Phymatotrichum omnivorum, 983; strains, of Fusarium niveum, 24

Phytomonas, campestris, carbohydrate fermentation ability, 699–707; fermentation of carbohydrates by, 699–707; hederae, description of, 783; juglandis, carbohy-

drate fermentation ability, 699–707; malvacearum, carbohydrate fermentation ability, 699–707; medicaginis var. phaseolicola, comparison of European and American strains of, 85; **melophthora**, n. sp., cause of apple fruit rot, 557–571; **melophthora**, n. sp., characterization of, 570; phaseoli, carbohydrate fermentation ability, 699–707; phaseoli var. fuscans, carbohydrate fermentation ability, 699–707; phaseoli var. sojense, carbohydrate fermentation ability, 699–707; rhizogenes, incubation period for development on apple, 186; rhizogenes, infection through callus tissue by, 174–176; rhizogenes, inoculation of apple with, 179–189; rhizogenes, production of hairy root by, 167–177; tumefaciens, incubation period for development on apple stems, 186; tumefaciens, infection through callus tissues by, 174–176; tumefaciens, inoculation of apple with, 179–189; tumefaciens, production of crown gall by, 167–177; vascularum, carbohydrate fermentation ability, 699–707; vesicatoria, carbohydrate fermentation ability, 699–707; vitians, carbohydrate fermentation ability, 699–707

Phytophthora, arecae and palmivora, mixed cultures of, 224, 225; arecae, antheridia of, 220; arecae, chlamydospores of, 219; arecae, heterothallism in, 221–222; arecae, oospores and oogonia of, measurements of, 221, 225; arecae, oospores of, development in mixed cultures, 219–221; arecae, parasitic on Areca tops, and a strain of P. palmivora Butl. (P. faberi Maubl.) on a new host, Aleurites fordi, 217–227; arecae, sporangia of, 219; capsici, cause of blight of peppers, 775–780; capsici, culture of, 776; capsici, inoculations with, 777; cinnamomi, associated with Dicranopteris emarginata in soil, 1001–1002; cinnamomi, cause of heart rot of pineapple plants, 1001; cinnamomi, Pseudopythium phytophthoron a synonym of, 1001–1002; faberi, 217; heart rot of pineapple plants, fungicidal control of, 997; hybridization in, 225, 226; infestans, 610–611; infestans, on Solanum antipoviczii, 610; infestans, on Solanum verrucosum, 610–611; infestans, on wild potatoes, 22; meadii, cause of heart rot of pineapple plants, 1001; melongenae, cause of heart rot of pineapple plants, 1001; on Aleurites fordi, infection experiments with, 225; palmivora, a strain of, on a new host, Aleurites fordi, 222–227; palmivora, antheridia of, 225; palmivora, chlamydospores of, 223–224; palmivora, heterothallism in, 225, 226; palmivora, oospores and oogonia of, measurements of, 225; palmivora, oospores of, development in mixed cultures, 224–225; parasitica, cause of heart rot of pineapple plants, 1001; physiology and pathogenicity of species that cause heart rot of pineapple plants, 1001–1002; root disease of chestnut, 977–978; spp., attacked by Trichoderma lignorum, 840

PIERCE, LESLIE, see ROBERTS, JOHN W.

PIERSTORFF, A. L., A centralized scab-spray service, 759–766

Pineapple, disease, on sugar cane in Argentina, 667–668; fungicidal control of Phytophthora heart rot, 997; mealybug causes wilt of, 996–997; physiology and pathogenicity of Phytophthora species that cause heart rot of, 1001–1002; root-knot nematode in, 328–333; spotting of leaves caused by mealybug, 996; yellow spot, transmission of, virus of, 301–324; yellow spot virus, incubation period of, 318–320

Pine-tar oil, fungicidal value of, 861–864

Pinus, monticola, 899–904; palustris, Pestalozzia funerea races from, 6; ponderosa, studies of rot in wood of, 71; resinosa, fasciation in, 15

Pisum sativum, Fusarium wilt of, 253

PLAKIDAS, A. G., Infection studies with Mycosphaerella fragariae and Diplocarpon earliana, 21; "June yellows" of strawberry, 22

Plant, pathology, at Fourth Congress of International Society of Sugar Cane Technologists, Puerto Rico, 870; pathology, etiological concepts of, 17–18; physiology, book review, 197–200

Plants, immunity in, 95
Platanus occidentalis, host for Gloeodes pomigena, 938
Plum inoculated with, Gloeosporium perennans, 996; Neofabraea malicorticis, 996
Podosporiella decay of apple, 13
Pollen sterility, virus causing, in tobacco, 28
Popp, W., see Hanna, W. F.
Porte, William S., biography of Frederick John Pritchard, 201–205
Porter, D. R., Some environmental relations of watermelon wilt, 813–825
Porter, R. H., Reaction of tomatoes to mosaic, 22
Potato, blight, 609, 610, 611; effect of, on production of hydrogen sulphide from sulphur, 154; rust, 610; rust, on Solanum demissum, 481; spot, 611; virus diseases, in Mexico, 611–612
Potatoes, effect of lubricating oil on, 31; some diseases of wild, in Mexico, 609–612; wild, diseases of, in Mexico, 22
Precipitin-ring test applied to fungi, 18
Prevalence and distribution of physiologic forms of Puccinia graminis tritici, 113–116, 121–123, 130–131
Principles of plant quarantine, 933–935
Pritchard, Frederick John, biography of, 201–205; obituary note, 488
Pseudopythium phytophthoron, synonym of Phytophthora cinnamomi, 1001–1002
Puccinia, glumarum, on wheat in Argentina, 103; graminis agrostidis, physiologic specialization in, 106; graminis avenae, new physiologic form of, 788–789; graminis avenae, number of physiologic forms of, 106; graminis, dissemination of spores of, by invertebrates, 9; graminis, new forms of, produced on barberry, 25; graminis, new parasites of, 16; graminis phleipratensis, number of physiologic forms of, 106; graminis poae, physiologic specialization in, 106; graminis secalis, number of physiologic forms of, 106; graminis tritici, collected in Mexico in 1928, 134; graminis tritici, comparison of United States survey with Canadian survey for physiologic forms of, 118–120, 127, 136; graminis tritici, damage caused by, in 1926, 1927, and 1928, 139; graminis tritici, differential hosts for identification of physiologic forms of, 107, 109; graminis tritici, forms of, in relation to epidemiology, 25; graminis tritici, identification of physiologic forms of, 108–113; graminis tritici, identity and nature of physiologic forms isolated, 116, 123–125, 131–132; graminis tritici, in Texas, first collection of, in 1928, 134; graminis tritici, incubation period, of, 503–509; graminis tritici, influence of altered host metabolism upon infection type, 493–555; graminis tritici, inoculation and cultural methods for, 107–108; graminis tritici, key for identifications of physiologic forms of, 110–111; graminis tritici, migration of physiologic forms of, 116–118, 125–126, 132–136; graminis tritici, number of physiologic forms of, 105; graminis tritici, p.f. 21, 493–555; graminis tritici, physiologic forms of, expected from barberries, 120–121, 127–130, 136–138; graminis tritici, physiologic specialization as a factor in the epiphytology of, 105–142; graminis tritici, prevalence and distribution of physiologic forms of, 113–116, 121–123, 130–131; graminis tritici, reactions of differential varieties to, 112–113; graminis tritici, surveys for physiologic forms of, 107, 113–138; pittieriana, on Solanum demissum, 481, 610; pittieriana, on wild potatoes, 22; triticina, effect on yield and composition of wheat, 5; triticina, penetration of, in relation to stomatal aperture, 5
Pyrenochaeta decay of apple, 13
Pyrus coronaria, host for Gloeodes pomigena, 937
Pythium, Actinomycete antagonistic to, 27; adhaerens, from Rhizoclonium hieroglyphicum, 385; angustatum, on Spirogyra crassa, 385; dictyosporum, on S. crassa, 385; spp., attacked by Trichoderma lignorum, 840, 842; spp., on algae, 385; species, parasitic ability of, 385–390; ultimum, cause of damping off of tomato, 3

Quarantine, principles of, 933–935

Quarantines, plant, rôle of diseases in, 921–922
Quercus alba, host for Gloeodes pomigena, 938
QUICK, CLARENCE R., and FRANK A. PATTY, Convenient method of bleaching and clearing leaves, 925–926
Quince, flowering, inoculated with Gloeosporium perennans, 996; flowering, inoculated with Neofabraea malicorticis, 996; rust, on apple, 724, 725; rust, on apple fruits, 726; rust, on apple leaves, 727; rust, tests for physiologic forms, 731–732; successful inoculations with quince rust, 731; trees and fruits, G. perennans on, 995, 996

RABER, ORAN, review of Recent advances in botany, by E. C. Barton-Wright, 929–932
Races, cultural, of Helminthosporium gramineum, 6; cultural of Pestalozzia funerea, 6
Radio broadcasting of apple-scab sprays, 761–766
RAMSEY, G. B., Sulphur dioxide injury of tomatoes, 267–268
Ramularia, areola, 229, 231, 238; areola, conidial stage of **Mycosphaerella areola**, n. sp., 231; variation in, 11
Raspberries, black, mild streak of, 905–910
Rays, electromagnetic, effect on fungi, 277–300
Reaction of soil, effect of, on Phymatotrichum, 9
Reactions of differential varieties to Puccinia graminis tritici, 112–113
Red, cedar rusts, three species, 723–740; pine, fasciation in, 15
REDDICK, DONALD, Some diseases of wild potatoes in Mexico, 22; 609–612
REDDY, CHAS. S., Basisporium dry rot of corn, 22–23; see DAVIS, GLEN N.
Relation of thrips and mites to occurrence of smut and molds in figs, 248–252
Report of, fifth annual cotton-root rot conference, 983–993; the sixteenth annual meeting of the Pacific Division of The American Phytopathological Society, 995–1002
Resistance, of monocotyledonous plants to Phymatotrichum root rot, 9; of monocotyledons to Phymatotrichum root rot, 443–452; of plants to root rot, correlated with growth of P. omnivorum in plant juices, 459–474; of the Turk's-cap hibiscus, Malvaviscus conzattii, to Phymatotrichum root rot, 453–458; of tomato to leaf mold, 20; to curly top of sugar beet of bean hybrids and varieties, 207–216; to Giberella saubinetti, in corn, as affected by sugary gene, 675–697
Resistant species of bean to curly top, 214
Rhagoletis pomonella, 557–571
Rhizoclonium hieroglyphicum, Pythium adhaerens on, 385
Rhizoctonia, bataticola, causing disease of maize and beans in California, 637–644; solani, attacked by Trichoderma lignorum, 837–840; solani, cause of damping off of tomato seedlings, 3; solani, effect of, on production of hydrogen sulphide from sulphur, 155; solani, on cereals in South Australia, 827; solani, on lettuce, 27; solani, strains of, 8–9
Rhizopus, effect of, on Bibberella on seedling corn, 682–685, 690–691; fruit rot of avocado, 13; nigricans, effect of, on production of hydrogen sulphide from sulphur, 155; spp., attacked by Trichoderma lignorum, 840, 842; spp., in figs, 251
RHOADS, ARTHUR S., Clitocybe mushroom root rot—a new disease of bananas, 23; Clitocybe mushroom rot—a new disease of citrus, 23
Rice, Ophiobolus oryzinus on, 28; stem rot of, 28
RIKER, A. J., see ALLEN, T. C.; see KEITT, G. W.; and W. M. BANFIELD, Studies on development of crown gall, hairy root, and wound overgrowths in treated soil, 167–177; E. M. HILDEBRAND, and S. S. IVANOFF, Development of crown gall, hairy root, and wound overgrowth in glass cylinders, 179–189
Ring spot, tobacco, seed transmission of, 28
ROBERTS, JOHN W., and LESLIE PIERCE, Zinc-lime: a fungicide for the peach, 415–427
Rôle of diseases in plant quarantines, 921–922
Root, disease, of chestnut, Phytophthora, 977–978; -rot fungus, cotton, 917–920;

rot, of citrus, 23; rot, of milo, 265–267; rot, of pea, 13; rot, Phymatotrichum, effect of salts and soil reaction on, 9; rot, Phymatotrichum, resistance of monocotyledons to, 443–452; rot, Phymatotrichum, resistance of Turk's-cap hibiscus to, 453–458; rot, Phymatotrichum, resistance to, 9; rot, Phymatotrichum, susceptibility of Malvaceae to, 454, 455; rot, resistance of plants to, correlated with growth of Phymatotrichum omnivorum in plant juices, 459–474; rot, sugar cane, 27

Rosa, chlorosis in species of, 54

Rose, cyanide injury of, 66; effect of, on production of hydrogen sulphide from sulphur, 154; inoculation of haws with Gloeosporium perennans, 996; inoculation of haws with Neofabraea malicorticis, 996; mosaic and chloroses of, 53

ROSEN, H. R., Two forms of fire blight and a new related disease, 23–24

Rosette, pecan, chemical treatment of, 595–601; pecan, treatment with chemicals, 979–981

Rot, black, of stocks, 270; dry, of corn, 22; of apple fruit, caused by **Phytomonas melophthora**, n. sp., 557–571; of celery, caused by Phoma apiicola, 21; ripe, of pepper, 12; stalk, of sweet corn, 26

Rubus, allegheniensis, host for Gloeodes pomigena, 937; occidentalis, mild streak of, 905–910

Rust, cereal, parasites of, 16; dissemination of spores of, by terrestrial invertebrates, 9–10; leaf, effect on yield and composition of wheat, 5; leaf, of wheat, appressorium formation and pentration, 5; on wild potato, 610

Rusts of red cedar of apple, 723–740

Rye, pathogenicity of Bacterium translucens var. undllosum on, 4

Salix nigra, host for Gloeodes pomigena, 938

Salts, soil, effect of, on Phymatotrichum, 9

SAMSON, R. W., see KRAYBILL, H. R.

SAMUEL, GEOFFREY, Macrosporium solani on tomato fruit, 613–614; and S. D. GARRETT, Rhizoctonia solani on cereals in South Australia, 827–836

Sand cultures, nutritional deficiencies of corn in, 33

Santalum, mixed cultures of Phytophthora from Areca and, 219–221, 225

Sassafras variifolium, host for Gloeodes pomigena, 937

Scab, of citrus, 14, 481; of Lima bean, 481; peach, zinc-lime for, 420–421

Scald, apple, oiled wraps in control of, 603–607

SCHEFFER, T. C., see LINDGREN, R. M.

Sclerospora, graminicola, 573–586; graminicola, cause of green-ear disease of bajra in India, 241; graminicola, on bajra (Pennisetum typhoideum), 241–246; graminicola, oospores, germination of, 243–244; graminicola, oospores, viability of, 244–245; graminicola var. Andropogonis sorghi, 573, 582; graminicola var. sorghi, on maize, 587–594; graminicola var. A. sorghi, on sorghum, 587–594; graminicola var. sorghi, on teosinte, 589, 593; graminicola var. A. sorghi, two new hosts for, 587–594; noblei, inoculations with, 580; sorghi, basis for, as a species, 573–586; sorghi, diagnosis, 582–583

Sclerotinia, cinerea, effect of hydrogen-ion concentration on permeability of spore wall of, 164; cinera, effect of hydrogen-ion concentration on toxicity of pentathionic acid to spores of, 162–163; cinerea, effect of, on production of hydrogen sulphide from sulphur, 155; cinerea, effect of sulphur dusts on growth of, 155–156; cinerea, toxicity of condensation products of sulphur vapor to spores of, 149; cinerea, toxicity of dithionic acid to spores of, 159; cinerea, toxicity of hydrogen sulphide in aqueous solution of spores of, 156–157; cinerea, toxicity of hydrogen sulphide in gaseous condition to spores of, 156; cinerea, toxicity of pentathionic acid at a distance to spores of, 160–161; cinerea, toxicity of pentathionic acid to spores of, 159–160; cinerea, toxicity of sulphur at a distance to spores of, 160–161; cinerea, toxicity of sulphur dioxide to spores of,

150–151; cinerea, toxicity of sulphur filtrates to spores of, 161; cinerea, toxicity of sulphur filtrates to spores of, 161; cinerea, toxicity of sulphur vapor to spores of, 148; cinerea, toxicity of sulphuric acid to spores of, 159, 160; cinerea, toxicity of sulphurous acid to spores of, 151–152, 159; cinerea, toxicity of trithionic acid to spores of, 159; fructicola, on peach, zinc-lime for, 421–424; sclerotiorum, effect of, on production of hydrogen sulphide from sulphur, 155

Sclerotium, bataticola, effect of electromagnetic waves on, 282–299; oryzae, condial stage of, 28; rolfsii, attacked by Trichoderma lignorum, 840, 842; rolfsii, causing peanut wilt, 380–382; rolfsii, toxicity of naphthalene to, 30

Seed, -coat color, correlation of, in bean with resistance to curly top of sugar beets, 212; dissemination in Fusarium wilt of pea, 253–257; transmission of Fusarium orthoceras in pea, 24; transmission of tobacco virus, 28; treatments with chemical dusts and formaldehyde for smut control in oats, 429–441

Seedling blight, resistance to, in corn, as affected by sugary gene, 675–697

Sejus pomi, 251

Semesan, in control of basal rot of narcissus, 19

SENN, P. H., The effect of the sugary gene in corn on resistance to seedling blight caused by Gibberella saubinetti, 675–697

Septoria apii, cause of large-spot type of celery late blight, 810; graveolentis, cause of small-spot type of celery late blight, 810

Setaria glauca, Cercospora of, 20

SHAW, LUTHER, see KEITT, G. W.

Shoot rot of milo, 265–267

SLEETH, BAILEY, Physiologic strains of Fusarium niveum, 24

Slug, imported garden, dissemination of rust spores by, 9

Small fruits, keeping quality of, 715–719

Smilax hispida, host for Gloeodes pomigena, 938

SMITH, A. L., and J. R. HOLBERT, Diplodia stalk and carrot of dent corn, 24

SMITH, NATHAN R., book review, Principles of soil microbiology, by Selman A. Waksman, 871–872

SMATH, RALPH E., see HANSEN, H. N.

SMITH, WILLIAM K., The effect of different temperatures on the reaction of Hope wheat to bunt, 615–627; Reaction of Martin wheat to three physiologic forms of Tilletia tritici, 847–850

Smut, control in oats, 429–441; in figs, relation of thrips and mites to occurrence of, 248–252; loose, barley, 869–870; loose, of wheat, association with bunt, 10; of corn, axillary buds and infection in, 7; stinking, reaction of Martin wheat to physiologic forms of, 847–850; transmission of, in figs, 247–252

Smuts, genetics of, 8

SNELL, WALTER H., biography of NATHANIEL ORSON HOWARD, 491–492

SNYDER, W. C., Seed dissemination in Fusarium wilt of pea, 253–257; Seed transmission of Fusarium wilt of pea, 24–25

Sodium, excess of, relation to corn chlorosis, 42; hypochlorite, surface sterilization of apple twigs with, 185

Soil, behavior of Bacillus amylovorus, 657–660; conditions, relation to cotton root rot, 988–989; disinfectants, for control of cotton root rot, 990–991; fungi, Trichoderma lignorum as parasite of, 837–845; microbiology, Selman A. Waksman, book review, 871; temperatures, low, pathogenicity of Fusarium conglutinans Wr. at, 191–195

Solanum, antipoviczii, blight on, 610–611; demissum, immune from Phytophthora infestans, 609; demissum, Puccinia, pittieriana on, 22, 481; demissum, spot on, 611; verrucosum, blight on, 610; verrucosum, Phytophthora infestans on, 22

Sooty-blotch, fungus, apple, hosts for, 937–940; fungus, apple inoculations with, 939–945; fungus of apple, pathogenicity and cultural characters of, 937–952; of apple, 10

Sorbus sp., successful inoculations with hawthorn rust, 730

Sorghum, two new hosts of downy mildew of, 587–594

SPARROW, F. K., JR., Parasitic ability of certain species of Pythium, 385–390
SPAULDING, PERLEY, biography of LEIGH HUMBOLDT PENNINGTON, 1877-1929, 873–877
Spermogonial stage of **Mycosphaerella aerola**, n. sp., 234
Sphaceloma on Citrus, 481
Sphaerotheca pannosa, fungus parasitic on, 31
Spirogyra crassa, Pythium angustatum on, 385; P. dictyosporum on, 385
Sporangia of Phytophthora arecae, 219
Spore load, source of contamination of normal apple in relation to, 1001
Spores, bunt, odor of, 978–979; fungus, stability of pentathionic acid in presence of, 162–163; fungus, toxicity of sulphur dioxide to, 150–151; fungus, toxicity of sulphur vapor to, 148; of Botrytis cinerea, toxicity of pentathionic acid to, 160; of B. cinerea, toxicity of sulphuric acid to, 160; of Fusarium moniliforme, toxicity of pentathionic acid to, 160; of F. moniliforme, toxicity of sulphuric acid to, 160; of Glomerella cingulata, toxicity of pentathionic acid to, 160; of G. cingulata, toxicity of sulphuric acid to, 160; of Graphium ulmi, toxicity of pentathionic acid to, 160; of G. ulmi, toxicity of sulphuric acid to, 160; of pathogenic fungi, toxicity of pentathionic acid to, 160; of pathogenic fungi, toxicity of sulphuric acid to, 160; of Phoma pomi, toxicity of pentathionic acid to, 160; of P. pomi, toxicity of sulphuric acid to, 160; of Phomopsis sp., toxicity of pentathionic acid to, 160; of Phomopsis sp., toxicity of sulphuric acid to, 160; of Sclerotinia cinerea, effect of hydrogen-ion concentration on permeability of walls of, 164; of S. cinerea, effect of hydrogen-ion concentration on toxicity of pentathionic acid to, 162–163; of S. cinerea, toxicity of dithionic acid to, 159; of S. cinerea, toxicity of hydrogen sulphide in aqueous solution to, 156–157; of S. cinerea, toxicity of hydrogen sulphide in gaseous condition to, 156; of S. cinerea, toxicity of pentathionic acid at a distance to, 160–161; of S. cinerea, toxicity of pentathionic acid to, 159–160; of S. cinerea, toxicity of sulphur at a distance to, 160–161; of S. cinerea, toxicity of sulphur filtrates to, 161; of S. cinerea, toxicity of sulphuric acid to, 159, 160; of S. cinerea, toxicity of sulphurous acid to, 151–152, 159; of S. cinerea, toxicity of trithionic acid to, 159; of Thielavia basicola, toxicity of pentathionic acid to, 160; of T. basicola, toxicity of sulphuric acid to 160; of Verticillium alboatrum, toxicity of pentathionic acid to, 160; of V. alboatrum, toxicity of sulphuric acid to, 160
Sporormia, decay of apple, 13
Sporulation of species of Cercospora in pure culture, 20
Spot, on wild potatoes, 22; potato, 611
SPRAGUE, RODERICK, The influence of moisture on the development of the Cercosporella foot rot of winter cereals, 999–1000; Notes on Phyllosticta rabiei on chick pea, II, 786–787
Spray, effect of lubricating-oil, on potato, 31; pine-tar oil and copper resinate, 861–864; service, centralized, 761–766; studies on Bordeaux, 12; studies on Bordeaux deposition, 857–860
Spraying for control of, powdery mildew of snap beans; 7; zonate eye spot of turf grasses, 7
Spring tail, dissemination of rust spores by, 9
Stain of stored logs and lumber, 17
STAKMAN, E. C., book review, Biologie der pflanzenbewohnenden parasitischen Pilze, 721–722; LEE HINES, RALPH U. COTTER, and M. N. LEVINE, Physiologic forms of Puccinia graminis produced on barberries in nature, 25; LEE HINES, HARRY G. UKKELBERG, and WALLACE BUTLER, Distribution of physiologic forms of Puccinia graminis tritici in the United States and Mexico in relation to rust epidemiology, 25
STANLEY, A. R., and C. R. ORTON, Bacterial stalk rot of sweet corn, 26
Staphylea trifolia, host for Glocodes pomigena, 938

Starch near wounds on tobacco, 14
STEINER, G., and EDNA M. BUHRER, Nonspecificity of brown-ring symptoms in narcissus attacked by nematodes, 927–928
Stem, infection, in pears, by Botrytis, 269–270; rust, new form, No. 10, on oats, 788
Sterility of corn due to deficiency, 38
Sterilization, surface, of apple twigs with sodium hypochlorite, 185
STEVENS, NEIL E., Keeping quality as a factor in selecting new varieties of small fruits, 715–719; Notable outbreaks of cranberry fruit rots in Massachusetts, 911–916; and NELLIE W. NANCE, Efficiency of oiled wraps in the commercial control of apple scald, 603–607
Stewart's disease of corn, 13
Stocks, black rot of, 270
Stomata in relation to penetration of leaf rust, 5
STONE, G. M., see CALDWELL, R. M.
Strains, physiologic, of Fusarium niveum, 24
Strawberry, Armillaria crown rot of, 665–666; crinkle disease of, 709–713; effect of, on production of hydrogen sulphide from sulphur, 154; infection studies on, 21; June yellows of, 22
Streak, mild, of black raspberries, 905–910; of tomato, sources of viruses, 999
STREETER, L. R., E. O. MADER, and F. J. KOKOSKI, The adherence of copper dusts to foliage, 645–650
Stunt of cyclamen, caused by Cladosporium cyclaminis, 19
Sugar, beet, curly top, mechanical transmission of virus, 997–998; beet, resistance to curly top of, in bean hybrids and varieties, 207–216; cane, mosaic in varieties of, 27; cane, pathology, at Fourth Congress of International Society of Sugar Cane Technologists, Puerto Rico, 870; cane, pineapple disease in Argentina, 667–668; cane, Pythium root rot of, 27; cane, rotting of cuttings of, 7
Sugary gene, effect of, on resistance to Gibberella saubinetii in corn, 675–697
SULLIVAN, J. T., see CALDWELL, R. M.
Sulphur, barrier for root rot, 26; dioxide injury, of tomatoes, 267–268; dioxide, production of, in sulphur, 150; dioxide, toxicity of, to fungus spores, 150–151; dusts, effect of, on growth of Sclerotinia cinerea, 155–156; effect of fungi on production of hydrogen sulphide from, 154–156; effect of light, moisture, and physical condition on vaporization of, 146–147; effect of oxygen on toxicity of, 162; effect of temperatures on vaporization of, 144–146; filtrates, toxicity of, to spores of S. cinerea, 161; for control of cotton root rot, 989; fungicides, bacterial and fungous flora of, 785–786; fungicides, relation of pentathionic acid and its component constituents to the toxicity of, 143–165; ground, production of hydrogen sulphide in, 152; production of sulphur dioxide in, 150; toxicity of, at a distance, to spores of Sclerotinia cinerea, 160–161; toxicity of vapor to fungous spores, 148; vapor, condensation and crystallization of, 146; vapor, toxicity of condensation products of, 149; volatilized, physical and chemical nature of, 144
Sulphuric acid, toxicity of, to spores of Botrytis cinerea, 160; toxicity of, to spores of Fusarium moniliforme, 160; toxicity of, to spores of Glomerella cingulata, 160; toxicity of, to spores of Graphium ulmi, 160; toxicity of, to spores of pathogenic fungi, 160; toxicity of, to spores of Phoma pomi, 160; toxicity of, to spores of Phomopsis sp., 160; toxicity of, to spores of Sclerotinia cinerea, 159, 160; toxicity of, to spores of Thielavia basicola, 160; toxicity of, to spores of Verticillium alboatrum, 160
Sulphurous acid, toxicity of, to spores of Sclerotinia cinerea, 151–152; toxicity of, to spores of S. cinerea, 159
Sun blotch of avocado, 13
Survey for physiologic forms of Puccinia graminis tritici, comparison of United States with Canadian, 118–120, 127, 136
Surveys for physiologic forms of Puccinia graminis tritici, 107, 113–138
Susceptibility, grades of, in bean, to curly

top of sugar beet, 212; of Citrullus vulgaris to Colletotrichum lagenarium, 16; varietal, of beans, to Phytomonas medicaginis var. phaseolicola, 85
Synergism in bacterial disease of English ivy, 782–783

TAPKE, V. F., Seed treatments with chemical dusts and moraldehyde for smut control in oats, 429–441; An undescribed loose smut of barley, 869–870
TAUBENHAUS, J. J., see BACH, W. J.; see EZEKIEL, WALTER N.; and WALTER N. EZEKIEL, Nursery plants as possible carriers of Phymatotrichum root rot, 26; and WALTER N. EZEKIEL, Resistance of monocotyledons to Phymatotrichum root rot, 443–452; and WALTER N. EZEKIEL, Sulphur barriers and graminaceous crop barriers to prevent spread of Phymatotrichum root rot, 26
Teliospore germination in Gymnosporangium, effect of temperature on, 728
Temperature, effect of, on vaporization of sulphur, 146; leaf, relation to lettuce tipburn, 851–855
Temperatures, effect of different, on reaction of Hope wheat to bunt, 615–627; low soil, pathogenicity of Fusarium conglutinans at, 191–195
Texas, first collection of Puccinia graminis tritici made in 1928, 134
Thielavia basicola, toxicity of pentathionic acid to spores of, 160; toxicity of sulphuric acid to spores of, 160
Thielaviopsis, ethaceticus, causing pineapple disease of sugar cane in Argentina, 667–668; paradoxa, cause of sugar-cane cutting rot, 7
Thompson spot of avocado, 13
Thrips, bremeri, 251; dissemination of rust spores by, 10; in figs, 251; relation of, to occurrence of smut and molds in figs, 248–252; tabaci, technique for rearing, 309–312; tabaci, vector of pineapple yellow-spot virus, 301–324
TILFORD, PAUL E., see MASSEY, L. M.
Tilletia, levis, effect of delayed planting on control by copper carbonate dust, 651–655; levis, effect of different temperatures on reaction of Hope wheat to, 615–627; levis, "high smut" of wheat, 259; levis, Lolium infected with, 865; levis, odor of spores, 978–979; levis, production of chlamydospores in vegetative tissues of wheat plant, 661–664; lolii, 866; tritici, association with Ustilago tritici in same head of wheat, 10; tritici, effect of delayed planting on control by copper carbonate dust, 651–655; tritici, effect of different temperatures on reaction of Hope wheat, 615–627; tritici, "low smut" of wheat, 259; tritici, odor of spores, 978–979; tritici, production of chlamydospores in vegetative tissues of wheat plant, 661–664; tritici, reaction of Martin wheat to three physiologic forms of, 847–850
TIMS, E. C., Actinomycete antagonistic to Pythium root parasite of sugar cane, 27; and C. W. EDGERTON, Mosaic in sugar-cane varieties in Louisiana, 27
Tipburn, lettuce, relation of leaf temperature to, 851–855; of avocado, 13
Tobacco, juice of, comparison of, from mosaic and healthy plants, 29; mosaic, decomposition of safranin precipitate of, 29; mosaic diseases of, decomposition of the safranin-virus precipitate in, 965–975; mosaic, particle size of virus of, 29; -mosaic virus, 742; -mosaci virus, effect of various hosts on thermal death point, 744–745; -mosaic virus, influence of host species on resistance to chemicals, 754; -mosaic virus, influence of host species on tolerance to dilution, 752; -ring-spot virus, 742; -ring-spot virus, effect of various hosts on the thermal death point, 748; -ring-spot virus, influence of host species on resistance to aging in vitro, 750; seed-transmitted viruses of, 28; -spot-necrosis virus, 742; -spot-necrosis virus, effect of various hosts on thermal death point, 747–748; -spot-necrosis virus, influence of host species on aging in vitro, 751; starch near wounds in, 14
TOMASI, J. A. DE, Immunity in plants, 95–102
Tomato, damping off of, 3; effect of, on production of hydrogen sulphide from

sulphur, 154; fruit, Macrosporium solani on, 613–614; fruit, nailhead spot, 613–614; local lesions of Aucuba mosaic in, 16; mosaic, yellow-tomato, inoculation with virus of, 22; noninfectious leaf-deforming principle from mosaic plants of, 629–636; resistant to Cladosporium, 20; sources of viruses that cause streak, 999

Tomatoes, injury of, by sulphur dioxide, 267–268; reaction of, to mosaic, 22

TOWNSEND, G. R., Controlling bottom rot of lettuce by dusting, 27

Toxicity, of condensation products of sulphur vapor, 149; of dithionic acid, to spores of Sclerotinia cinerea, 159; of hydrogen sulphide in aqueous solution to spores of S. cinerea, 156–157; of hydrogen sulphide in gaseous condition to spores of S. cinerea, 156; a pentathionic acid, effect of hydrogen-ion concentration on, 162–163; of pentathionic acid to spores of Botrytis cinerea, 160; of pentathionic acid to spores of Fusarium moniliforme, 160; of pentathionic acid to spores of Glomerella cingulata, 160; of pentathionic acid to spores of Graphium ulmi, 160; of pentathionic acid to spores of pathogenic fungi, 160; of pentathionic acid to spores of Phoma pomi, 160; of pentathionic acid to spores of Phomopsis sp., 160; of pentathionic acid to spores of S. cinerea, 159–160; of pentathionic acid to spores of Thielavia basicola, 160; of pentathionic acid to spores of Verticillium alboatrum, 160; of sulphur, effect of oxygen on, 162; of sulphur dioxide to fungus spores, 150–151; of sulphur filtrates to spores of S. cinerea, 161; of sulphur fungicides, relation of pentathionic acid and its component constituents to, 143–165; of sulphur vapor to fungus spores, 148; of sulphuric acid to spores of B. cinerea, 160; of sulphuric acid to spores of F. moniliforme, 160; of sulphuric acid to spores of Glomerella cingulata, 160; of sulphuric acid to spores of Graphium ulmi, 160; of sulphuric acid to spores of pathogenic fungi, 160; of sulphuric acid to spores of Phoma pomi, 160; of sulphuric acid to spores of Phomopsis sp., 160; of sulphuric acid to spores of S. cinerea, 159, 160; of sulphuric acid to spores of T. basicola, 160; of sulphuric acid to spores of V. alboatrum, 160; of sulphurous acid to spores of S. cinerea, 151–152, 159; of trithionic acid to spores of S. cinerea, 159; to spores of S. cinerea of pentathionic acid at a distance, 160–161; to spores of S. cinerea of sulphur at a distance, 160–161

Transmission of smut and molds in figs, 247–252

Transportation by truck, increase of, a factor in selecting varieties of small fruits, 715–719

Trichoderma lignorum, parasite of other soil fungi, 837–845

Trithionic acid, toxicity of, to spores of Sclerotinia cinerea, 159

Tulip, analysis of breaking, 998

TULLIS, E. C., Helminthosporium sigmoideum, conidial stage of Sclerotium oryzae, 28; Ophiobolus oryzinus on rice in Arkansas, 28

Tung-oil tree, a new host for Phytophthora palmivora, 222–227

Turk's-cap hibiscus, resistance to Phymatotrichum root rot, 453–458

Tylenchus dipsaci, brown-ring symptoms produced by, 927–928

UKKELBERG, HARRY G., see STAKMAN, E. C.

Ulmus fulva, host for Gloeodes pomigena, 937

Ultra-violet, rays, effect of, on fungi, 277–300; Schumann region, effect of, on fungi, apparatus for studying, 284–286; Schumann region, effect on fungi, 284–288

UPPAL, B. N., see WESTON, WM. H., JR., and M. K. DESAI, Two new hosts of downy mildew of sorghum in Bombay, 587–594

Uromyces falens, penetration of wheat leaves by, 6

Use of indelible pencils as indicators of moisture content of wood, 899–904

Ustilago, kollei, genetics of, 8; **nigra**, n. sp., undescribed loose smut of barley, 869; nuda, on barley, 860; tritici, association with Tilletia tritici in same head of

wheat, 10; tritici, two physiologic forms of, 11; zeae, genetics of, 20

VALLEAU, W. D., Two seed-transmitted ring-spot diseases of tobacco, 28
Variability of Venturia inaequalis, 21
Variants of Pestalozzia funerea, 6
Variation in, Botrytis cinerea, 11; Fusarium, 11; imperfect fungi, mechanism of, 953–964; Phoma, 11; Ramularia, 11
Varieties of bean, resistance to curly top of sugar beets in hybrids and, 207–216
VAUGHAN, E. K., see ZELLER, S. M.
VENKATARAYAN, S. V., Phytophthora arecae, parasitic on Areca tops, and a strain of P. palmivora Butl. (P. faberi Maubl.) on a new host, Aleurites fordi, 217–227
Venturia, inaequalis, effect of, on production of hydrogen sulphide from sulphur, 155; inaequalis, variability of, 21; pyrina, ascospore discharge of, 997; pyrina, Mycosphaerella associated with, in pear-scab lesions, 997
Vermicularia capsici, cause of ripe rot of pepper, 12
Verticillium, alboatrum, cause of a cotton wilt, 19, 768; alboatrum, toxicity of pentathionic acid to spores of, 160; alboatrum, toxicity of sulphuric acid to spores of, 160; decay of apple, 13; wilt of chrysanthemum, 14; wilt of cotton, 767–773; wilt of cotton, distribution in Mississippi, 771; wilt of cotton, relation to soil type, 772; wilt of cotton, varietal susceptibility, 770
VESTAL, EDGAR F., Cercospora leaf spot on sugar beets under different conditions, 29
Viability of oospores in Sclerospora graminicola on bajra, 244–245
Vigna sinensis, attacked by charcoal rot, 643; Rhizoctonia bataticola on, 637
VINSON, CARL G., Decomposition of safranin precipitate of mosaic virus of tobacco, 29; Mosaic diseases of tobacco: V. Decomposition of the safranin-virus precipitate, 965–975; see WAUGH, JOHN G., and EDGAR J. GILDHAUS, Comparison of juices from diseased and healthy tobacco plant, 29
Virus, decomposition of safranin precipitate of, 29; diseases of rose, 53; diseases, potato, in Mexico, 611–612; mechanical transmission of curly top, 997–998; of pineapple yellow spot, 301–324; of pineapple yellow spot, incubation period of, 318–320; of strawberry, crinkle disease, 709–713; of tobacco mosaic, 14; of tobacco mosaic, particle size of, 29; of yellow dwarf of onions, 11; precipitate of, from tobacco juice, 29; seed-transmitted, of tobacco, 28
Viruses, a new method of inoculating with, 998–999; plant, effect of host species on properties, 741–757; plant, effect of hosts on thermal death point, 744–749; plant, influence of host species on resistance to aging in vitro, 749–752; plant, resistance to chemicals, 753–754; plant, tolerance to dilution, 752–753; sources of those causing streak of tomato, 999
Vitis, cordifolia, host for Gloeodes pomigena, 938; spp., resistance of, to Phymatotrichum, 4
VOORHEES, R. K., and A. H. EDDINS, Gibberella moniliformis on corn plants in the field, 29

WAGNER, F. A., see ELLIOTT, CHARLOTTE
WAKSMAN, SELMAN A., Principles of soil microbiology, book review, 871–872
WALLACE, J. M., Physiologic specialization as a factor in the epiphytology of Puccinia graminis tritici, 105–142
Walnut, black, canker caused by a Nectria, 267–269; black, Nectria canker of, 3; blight, caused by Pseudomonas juglandis, 1000; blight, control in Oregon, 1000
Water injury to avocado, 13
Watermelon, anthracnose of, 16; strains of the wilt organism of, 24; wilt, environmental relations of, 813–825; wilt resistance of, in heavily and moderately infested soils, 30
WAUGH, JOHN G., and CARL G. VINSON, Particle size of virus of tobacco mosaic in purified solution, 29
Weather, influence on cranberry fruit rots, 912–916
WEBER, GEORGE F., Blight of peppers in Florida caused by Phytophthora, 775–780
Weeds, eradication of, to control celery mosaic, 30

WEINDLING, R., Trichoderma lignorum as a parasite of other soil fungi, 837–845
WEISS, FREEMAN, and E. L. EVINGER, Toxicity of naphthalene for fungi of Sclerotium rolfsii type, 30
WELLMAN, F. L., Control of celery mosaic by eradicating wild hosts, 30
WESTER, R. E., see NEAL, D. C.
WESTON, WM. H., JR., and B. N. UPPAL, Basis for Sclerospora sorghi as a species, 573–586
Wheat, association of bunt, with loose smut and ergot of, 10–11; bunt, effect of delayed planting on control by copper carbonate dust, 651–655; bunt, Lolium infected with, 865; bunt, production of chlamydospores in vegetative tissues, 661–664; damage to, caused by stem rust in 1926, 1927, and 1928, 139; effect of leaf rust on, 5; Hope, effect of different temperatures on reaction to bunt, 615–627; Hope, resistance to bunt, 615–616; Hope, susceptibility to bunt when planted in fall, 615–616; loose smut of, physiologic forms of, 11; Martin, reaction to physiologic of Tilletia tritici, 847–850; pathogenicity of Bacterium translucens var. undulosum on, 4; plants, effect of bunt on height of, 259–262; rust, physiologic forms in relation to epidemiology, 25; stripe rust on, in Argentina, 103
WHITE, RICHARD P., Chloroses of the rose, 53–69
White variants of normally yellow species of Bacterium, 787; pathogenicity of, 788
WILCOX, HAZEL W., see LINK, GEORGE K. K.
Willow canker fungus, effect of, on production of hydrogen sulphide from sulphur, 155
WILSON, J. J., Wilt resistance of Pride of Muscatine (K–84) watermelons on heavily versus moderately infested soil, 30
Wilt, of pineapple, caused by mealybug, 996–997; of watermelon, environmental relations of, 813–825; seed dissemination in Fusarium, of pea, 253–257; Verticillum, of chrysanthemum, 14; watermelon, in moderately and heavily infested soil, 30
WINGARD, S. A., see PETTINGER, N. A.
Winter injury, and woolly aphis, relation to perennial apple canker, 398, 399, 412; relation to perennial canker of apple, 407–408
WOLF, F. A., see EHRLICH, JOHN
Wood, moisture content, 899–904; relation of moisture of, to fungal growth, 71
Woolly aphis, relation to perennial apple canker, 397, 398, 412
Wound, cork, period for development of, on apple stems, 186; overgrowth, crown gall, and hairy root, development of, in glass cylinders, 179–189; overgrowths, crown gall, and hairy root, differentiation of types of, 171–174; overgrowths, crown gall, and hairy root, studies on the development of, in treated soil, 167–177

X-rays, effect on fungi, 277–300, 284, 285

YARWOOD, CECIL E., Ampelomyces quisqualis on clover mildew, 31; Reversible phototropism of germ tubes of clover powdery mildew, 31
Yeasts in figs, 251
Yellow, dwarf, of onions, 11; spot, of Emilia sagittata, 306; spot, pineapple, hosts of virus, 316, 321; spot, pineapple, transmission of virus of, 301–324
Yellows, cabbage, development of, at low temperatures, 191–195; development of, on Brassica oleracea at low temperatures, 191–195; of strawberry, distinct from crinkle, 709–713
Yield of wheat, effect of leaf rust on, 5
YOUNG, C. H., see ALEXANDER, L. J.
YOUNG, PAUL A., Lubricating-oil sprays and their effect on potatoes, 31

ZALESKI, KAROL, see BURKHOLDER, WALTER H.
Zanthoxylum americanum, host for Gloeodes pomigena, 938
Zea mays, host for Sclerospora sorghi, 583; new host for Scl. graminicola var. Andropogonis-sorghi, 587–594
ZELLER, S. M., Armillaria crown rot of strawberry, 665–666; and E. K. VAUGHAN, Crinkle disease of strawberry, 709–713
Zinc, -lime, fungicide for peach, 415–427; -lime method of preparing spray, 416–417; sulphate, in fire-blight control, 15